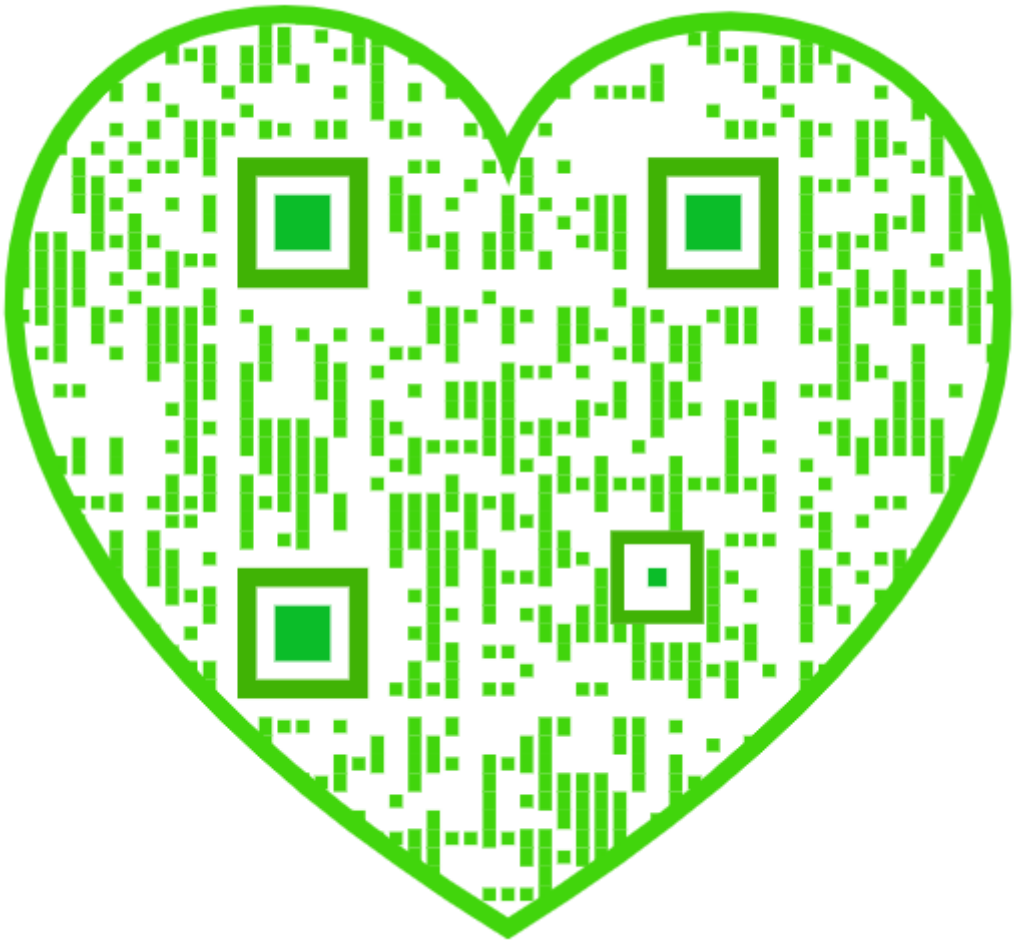

THE ARCHITECT AND ENGINEER

OCTOBER 1933

PROBLEM:

WHEN plans were under consideration for a new building for the Cities Service Company, New York City, known as Sixty Wall Tower, there was one very obvious drawback. The plot of ground was small. The zoning law limited the height of the main part of the building to thirty stories. A monumental tower was desirable. If this tower was built higher than forty-eight stories, the number of elevators required for efficient service would occupy an uneconomic proportion of floor space.

SOLUTION:

HERE was an ideal opportunity for the first practical application of a new step in elevator practice which Otis engineers had been developing through years of research — the double-deck elevator. With the installation of double-deck elevators, it was possible to make the tower sixty stories high. Eight of these elevators now serve this building, which reaches above all others in lower Manhattan and is the third tallest building in the world. These eight tower elevators provide transportation facilities equivalent to fourteen ordinary elevators. They conserve space, cut operating costs, and, together with eighteen single-deck elevators and ten escalators, provide this building with adequate and convenient vertical transportation facilities. . . . Otis Elevator Company, offices in the principal cities of the world.

Modernize for Economy!

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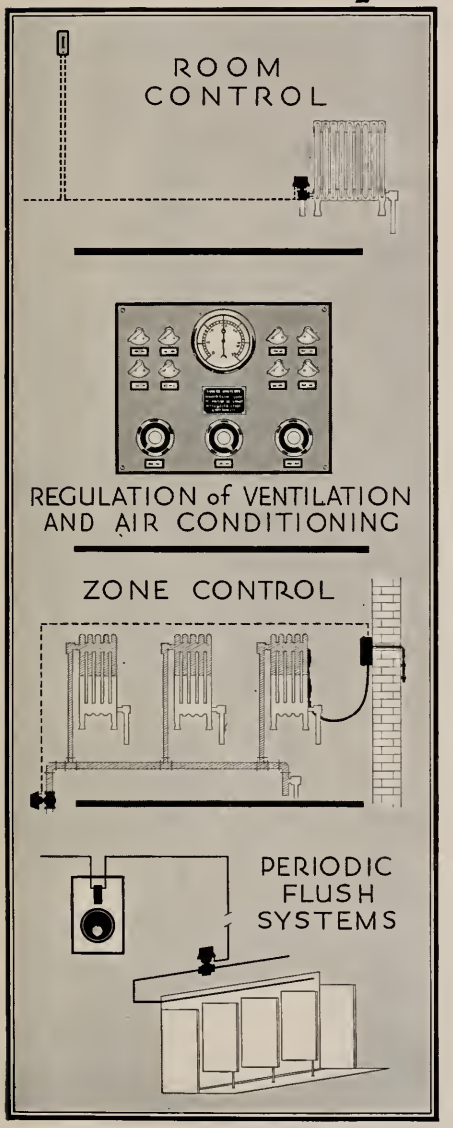

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JOHNSON HEAT CONTROL

Thumb Tacks and T-Square

AND now they are building homes out of cotton. Stanley Nicholson, an amateur aviator, has recently completed a portable house on a camp site near Milwaukee, with exterior of unbleached cotton sheeting that is given a coating of cellulose "dope" as applied to airplane wings. This paint waterproofs and shrinks the fabric tightly in place. The interior is completely lined with the same material and the wall-cell is filled with a loose-pack insulating material. The floor which is an integral part of the rigid room unit, is of double thickness with an intervening air-space.

Each "room-unit" is of a standardized size and shape that can be fitted for a kitchen, dining room, bedroom or living room. Smaller units are provided for bathrooms. As the need for additional space is required, other units are easily aligned and joined to those already in place.

The first demonstration home which has been occupied this past summer by Mr. Nicholson, is of two units weighing but 370 pounds and costing $220.00. Among the attractive features of the house are hot and cold running water and an air-conditioning system. The kitchen is fitted with a refrigerator, gasoline range and sink, and concealed fixtures make it possible to convert the living room into a bedroom, combining essential bathroom facilities. By the economies of mass production, it is planned to introduce the "room-unit" house to campers through sporting goods merchandising channels at a price of less than $100 per unit.

⁂ ⁂ ⁂

NOBODY has to do anything.

No industrialist has to join his trade association.

There is nothing in the National Industrial Recovery Act that compels anything.

But, it is easier to co-operate and it is much more comfortable in the eyes of everyone if every industrialist does co-operate, join his trade association and help put the recovery programme over in a big way. It's much easier to work in groups than singly and the larger and better the groups are organized the easier it is going to be.

⁂ ⁂ ⁂

EVERY tenth person gainfully employed in the United States depends upon construction for his livelihood. It is estimated that fully as much employment is given indirectly in dependent industries as is created in actual construction works. These figures show that under the National Recovery Act public works programme just how important it is that projects get under way. Every dollar spent for construction multiplies as it passes into circulation and becomes a factor of tremendous importance in the nation's economic life. The reemployment of the vast army of construction workers, who will spend if they earn, will make markets for all industries. Hence it behooves the administration to hurry up its public works program. There has already been too much procrastination.

⁂ ⁂ ⁂

LAST month we published two letters of appreciation from our readers. Here are two more that are none the less appreciative and interesting:

Editor, ARCHITECT AND ENGINEER:

I thank you very much for your kind letter of August 17th, also copy of the August issue of The Architect and Engineer. I have gone over this issue with much interest and have particularly noted the prominent place you gave to the Treasury Department regarding further information on architects and engineers. We are indebted to you for this.

I want to say that I am very much interested in your particular magazine, as it is something new to me and gives a very attractive study of California. I am also interested to see that you coupled architects and engineers together. This we have always thought necessary on large architectural projects.

With personal regards, I am,

Sincerely,

L. W. ROBERT, Jr.

Assistant Secretary of the Treasury,

Washington, D. C.

⁂ ⁂ ⁂

The following is an abstract of a letter from Hart Wood, architect of Honolulu, who will be remembered as a former partner of Horace Simpson in San Francisco:

"I have read all of Elmer Grey's "Vicissitudes" with considerable enjoyment and am writing to-day to tell him so.

"I want to congratulatte you on the tone and standard of work you have been able to maintain through these trying times.

"Yours is one of the few publications I have felt the least able to give up and so have an unbroken file for several years past.

"Visitors from the mainland and returning islanders tell us that we have been very fortunate in comparison with the mainland throughout this struggle of the past four years. It is true that with perhaps one exception the architects have been able to carry on, though of course, at much reduced speed. The exception was possibly not due altogether to inability to keep going but that for the present at least the going seemed better in other channels.

"We have an active Chapter with a comparatively large representation of the registered architects and a very good attendance average. We recently started a schedule of semi-monthly meetings because of increased activity and interest."

⁂ ⁂ ⁂

THE CHICAGO fair closes November 1. From an architectural view-point it may not have been as successful as the White Fair 40 years ago. While the present Exposition may reflect the "modern trend" to some extent critics say it is not a true picture of 40 years of artistic gain inspired by Chicago's previous Fair.

We recall the words of Frank Adams Cram early in the year, who found little to enthuse about in the new designs, except that they formed a "close kinship with the painted flats of the theater, carelessly stacked," a "Tin Lizzie style."

If those who developed the new buidings were making any claims for them as significant achievements of architecture, there would be more room for argument, says a writer in the Springfield Republican. "But," this writer continues, 'that is not the case. The buildings were conceived entirely in a spirit of utility, which was judged to be necessary on account of the financial risk involved in the exposition. It has been officially explained that as the buildings must be removed after the fair, materials economical in original cost, having some salvage value and permitting of dissembly at low cost, were selected. Paul P. Cret, Philadelphia architect, who designed the Hall of Science, wrote a few months ago that the buildings hoped to get from bright paint, from ingenious planting and from occasional sculptured decorations, some of the charm which they obviously lacked. "Buildings of this "type," said Mr. Cret, "are, at best, 'only a successful background for 'crowds."

Those who have returned from a visit to the Fair are neither enthused nor disappointed in what they have seen. They are of the opinion that while certain types of construction may be all right for Exposition buildings, they are hardly suitable for our domestic and commercial uses. We have not yet reached the stage where we deem it necessary to substitute paint in gay colors or ingenious electrical effects for architectural detail on exterior walls, such as predominate at the Chicago Exposition.

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OCTOBER
1933

NRA
WE DO OUR PART

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Chesley Bonestell

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Recent work of Bliss and Fairweather, architects of San Francisco, including an airplane view of the proposed plant of the Standard Brands of California, Federal building, Stockton, and residence for Mrs. O. A. Hale, Saratoga.
Second installment of Robt. B. Stacy-Judd's interesting article on Mayan Architecture.
Progress work on the San Francisco Bay Bridge with late photographs of various units under construction.
Portfolio of intimate sketches of local scenes by Arne Koitwold.

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PROPOSED CHAPEL, NEAR MEXICO CITY (All Mayan motifs)
ROBT. B. STACY-JUDD, ARCHITECT

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OCTOBER 1933
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WANTED — AN ALL-AMERICAN ARCHITECTURE

With Ancient Mayan Motifs as a Background — Part 1

by
ROBERT B. STACY-JUDD, A.I.A.

*(In the following poem by Mr. Stacy-Judd, is told the triumph in tragedy of the Mayan Civilization, believed to be the greatest of all civilizations of which we have any tangible evidence. The poem was published in "Pencil Points" through whose courtesy we herewith reprint it.—*EDITOR.*)*

THE MAYA RACE

Tradegy, and the Mind of Time combined
To usher, from apparent realms of space,
A people, wise in lore, tradition intertwined
With skill in Arts and Peace—The Maya Race.

No scribe has blazoned scrolls that we may learn
From whence they came, or source of power which willed,
Or what stupendous grief that made them turn
To Yucatan, an Empire to re-build.

What cataclysm drenched their eyes with tears!
What losses must have been their wages of toil!
What shattered hopes and dreams encouraged fears
When they were cast adrift to seek new soil!

And yet, forlorn, without a dreg or hope,
Driven, desperate, dreams all turned to dust.
Starving, suffering, powerless to cope,
They gave the Supreme Being simple trust.

And by his faith, well tried throughout past years
They gathered of their remnant shattered band,
And, probably, o'er waters fraught with fears,
Conquered, in their quest for safer land.

Intelligence supreme was theirs, long ere
The dread events which sealed their country's doom.
Of this we are assured by what is there
In Yucatan, from Copan to Tuluum.

Time soothed their grief and urged great minds to build
Pyramids, and temples, and palaces to store
Replicas of their arts, which now but filled
Their memories, and fostered dreams of yore.

So, glorious, as the sun from out the night,
Rose monuments, by architects unknown,
But brilliant in triumph of their right
To create history—in living stone.

Though ruins now, we prove their works compare
With all the Classic Orders, and longevity
In Fame shall crown the loving care
Which joyous labor freely gave posterity.

America! World's most dominant factor, cynosure of lesser powers, leader in many branches of science, mechanics and "modernism." The foremost nation in claiming originality, yet the world's greatest imitator when it comes to architecture and its allied arts.

A host of styles have found a warm welcome in this generous-hearted land, and legions of eager designers have sprung with avidity on the 'old world' introductions and polished them up so that they look like new.

The lordly Greek and Roman classics, with their columned porticos and pedimented facades, arrived in the so-called 'new world' with their erstwhile dignity, and courted a renaissance.

Stately Gothic came and marched with ecclesiastic grace down the aisles of men,

EL CASTILLO. Chichen-Itza, Yucatan. This magnificent pyramid, like so many Maya structures, is enrapted with esoteric lore. There are 4 staircases, representing the four seasons; 91 treads to each stairway and a one step platform on top. 4 times 91 equals 364, add the platform step and the total is 365, or days in the year. Nine great terraces form the pyramid proper. The Maya year was divided into two periods of nine months each, each month consisting of 20 days and five odd days. There are 52 panels on the four facades. These represent the fifty-two year period into which the Mayas divided their historical chronicles. At the end of each fifty-two period the ceremony of re lighting the fires, (of life) took place at dawn on a pyramid top.

no whit discouraged by the craftless hand.

The charming English mansion strode with jovial countenance throughout the hospitable States and remained for years a privileged guest. The architecture of other countries in turn found favor, more or less, and, finally the freedom of the nation was extended to the arts of Spain and her seductive companions. But none accepted conversion.

The foregoing is not intended as unconstructive criticism. It is admitted that

After a trying journey through the dense, unfriendly jungle the ancient city site of the Mayas known as Zayi is reached. It nestles in the soft shadows where the great Cordilleros range might be said to be born. Of the jungle buried buildings little is known except the Palace shown herewith. It is a masterpiece in design and workmanship and contains 72 suites of apartments. The author slept in this structure. It was filled with large serpents, vampires (of the blood sucking variety) iguanas and hornets, not to mention scorpions, tarantu'as and giant spiders. And the heat!

American architects have developed the skyscraper and, in one sense, a style in that class. But whatever the result, no matter how distinctive, it is a type of, and confined to the skyscraper and is utterly unsuited to any other class of building.

Architecture a Language

A 'style' in architecture is a language spoken in lasting substances by a people who have attained a cultural level permitting intelligent conversation through not only the present but succeeding ages. It is a tongue spoken and written, having an alphabet and grammar. Its letters, words and sentences are formed by the arrangement of cornices and their details, carvings or lack of same, moldings, their width and height, openings, bulk and massing, or general planning. The change in any one of these details, or the method in which they are grouped designates the milestones in its life history. The artistry of properly grouping the grammared sentences in a structure, as a whole, constitutes the prose or poem in stone. Such is the language of Architecture. Through this intriguing science the beliefs, religion, government, sciences, hopes and fears of a nation may be learned. It is further quite possible, due entirely to individualism being expressed in a given style, to learn even the name of the architect.

Without an individual style in architecture no nation is truly great.

With it comes the spirit of power and grace of the mighty. It is the emblem of a classic civilization and typifies an inspired race of people.

A national architectural style therefore must have its own alphabet, grammar and constructive sentences, in other words, a language. To establish such a style it is obvious that the motifs should be adaptable to all classes of structures in all parts of the country. The same conditions apply to the skyscraper, commercial, ecclesiastic, domestic or public buildings.

By this I do not mean that a church should bear the same form and decoration as the residence, each type enforces its own conditions. I mean the fundamental

motifs should be used in all types, if a national style is sought. In other words, a definite language, differentiated just as is ecclesiastic and domestic Gothic. Further it is not intended to insist dogmatically that each and every structure shall be thus and so, but that a style be created for all types of buildings recognisable as National.

An American Tradegy

As much as we dislike admitting it, we are a tragic figure in this, the World School of Architectural Classics. A host of geniuses lie buried beneath a pile of gross materialism, iron-bound custom and its attendant inhibitions. Nevertheless, they are but awaiting the time when America is ready to foster the necessary prolonged cultivation.

From time to time great minds have conceived possible solutions which have lain unnoticed in the lap of an unappreciative American populous. Style reception was cold. Psychological reasoning might attribute the unresponsive attitude of the public mind of entirely too natural conditions. The two-gun, two-fisted he-man, strictly materialistic formative period of nation building dispensed with all consideration of the finer arts in its curriculum. In fact such tendencies were deemed indicative of effeminancy.

It is only in comparatively recent years that conditions are changing. While men worked, seeking riches, women took advantage of their spare time. Women's social clubs sprang up over night, like mushrooms. Every city, town and hamlet in these United States possesses its feminine clubs, post-graduate emporiums disseminating culture and advanced knowledge. Hence the fact that American women are, as a body, far more intellectual than the men.

The men, realizing the *challenge to supremacy* of their already inflated ego, determinedly follow suit. The movement is inspiring, it indicates the period of intellecutal awakening is at hand. The thirst for knowledge carries the possibility of world leadership. The library, motion pic-

THE ANNEX. CASA DE LAS MONJAS. Chichen Itza, Yucatan. An elaborately carved building, full of esoteric symbols and rich in motifs.

ture and radio are rapidly consumating the change. Appreciation of the arts is but one step further. Already the demand is for American composers, American authors, American artists, American poets and American craftsmen.

Believing that the time aspects are propitious, I now place a new offering in the erstwhile perverse lap of America. My plea is for an All-American Architecture and its Allied Arts.

In all branches of art it has always been man's prerogative to turn to masters of the past for inspiration. We realize the new is ever founded on the old, because no man is truly original. With one possible exception the world of art has been ransacked by art creators seeking new motifs. It is

THE GOVERNOR'S PALACE. UXMAL, YUCATAN. The author counted over 20,000 carved stones in the four facades. The building, is 325 feet long, 39 feet wide, 25 feet high. It stands on a solid stone platform, built of small stones set in cement, covering approximately seven acres in extent and 35 feet high. The author designated Uxmal the Queen City of the Mayas.

THE CASA DE LAS MONJAS, UXMAL, YUCATAN. This is one of the most unusual buildings in the world. It stands on a solid stone base approximately five acres in extent, 30 feet high. The edifice is formed with four distinct wings, each facing the enormous court. Each wing is of a distinct period of the Maya civilization. The author based here for two weeks and has arranged to conduct his base camp in the same place on the forthcoming expedition. The Mexican Government has already granted the necessary permit.

to the one possible exception and its masters that I have turned: masters in a civilization equalling, if not surpassing in some ways, all the classic races. Theirs is a fountain of life in new art motifs.

What race then is worthy of such flattering consideration?

At America's back door, buried beneath a vast carpet of almost impenetrable jungle, lies a great culture. Pathetic to relate, it remained undiscovered until recent times. Within the relentless jungle grasp are treasures untold, treasures in gold and jade, treasures in architectural form of entirely new motifs.

The country is the great peninsula of Yucatan and adjacent areas. The masters are known as the ancient Mayas.

Throughout this land where now the jaguar and the vulture enact their grim ritual, lie scattered pages of stone from the history book of a vanished civilization. Some remain aloft. Some have been torn from their places by jungle growth or the ignorant, destructive hand of man. Yet each building remains a page, each city a chapter, in the history of a wonderful race —buildings and cities unbelievably vast and beautiful. Yet torn and mutilated as

THE PALACE, KABAH, YUCATAN. This enormous structure is an awe inspiring sight. The ancient city site is practically unknown.

this book seems, the pages are there and may be repaired.

They are cities of silence now, their builders lost, forgotten. Where once an ultra civilization reared its dignity in stone, now parrots chatter and death slinks on soft, jungle feet. Where once walked youth and wisdom now stand closely packed boles, struggling in vain against the strangle-hold of an army of parasites. The once pastel shaded or white stone facades of architectural masterpieces no longer gleam in the sun. Yet the walls stand defiant, guarding another world of thought, a realm of new knowledge and a treasure house of intrinsic and esoteric wealth.

The discovery of these ancient cities is more than just another "prehistoric find." It is pregnant with startling possibilities. When the stone pages are at last rebound, they will reveal one of the greatest stories in the world, a story so vast not only in human interest but in scientific knowledge that our very histories will need to be rewritten.

Americans and Mayas Analogous

In the process of colonizing and developing a new land, the colonists must pass through a strenuous formative period. America has passed through this period. True, its astounding wealth in natural resources retarded the advent of the next stage almost to the point of decay, but the transition is now in process of completion.

Twenty-five hundred years earlier, the Maya civilization settled on the American continent and progressed through exactly similar stages.

With identical aspirations, but lacking America's great advantage of extreme natural wealth, the two civilizations developed on the same continent. Both sprang from a mother land bringing their culture with them. But herein the analogy ceases. The Mayas developed without foreign influx. The Americans absorbed the blood and culture of many races.

PROPOSED STORES AND OFFICE BUILDING, LOS ANGELES
All Mayan motifs. (One city block).
Robt. B. Stacy-Judd, Architect

At last, realizing her precarious position in the world of arts, America, with the same pioneer spirit of old, is spontaneously encouraging her own geniuses. In effect she is rapidly taking her place, and in some instances the lead in art, literature and science. A beginning in her own Architectural Style merely awaits acceptance of the most suitable motifs. Believing that the time is now, I ask what better opportunity is afforded than the magnificent Mayan heritage.

It is in a spirit entirely impersonal that I dare enter unbidden into the realms of such profound importance. In consequence I submit my suggestions with extreme diffidence.

If, as is my belief, I have converted old motifs to new as a foundation for an All-American architecture and its allied arts, and if there is but a germ of merit of such conversion then it is, at least, worthy of unbiased consideration.

Symphonic proportions are not attained on a single string. In like manner the single mind is inadequate to assume the responsibility of creating an architectural style. The lighted match unapplied to the underbrush cannot create a forest fire.

PROPOSED DEPARTMENT STORE, OFFICE BUILDING, HOTEL, THEATER AND ENCLOSED ARENA, HOLLYWOOD. All Mayan motifs. (Two city blocks)
Robt. B. Stacy-Judd, Architect

The task, therefore, is for the army of American designers. The long secreted art treasures of the mysterious Mayas are slowly being brought to light. They are gifts of the gods, lying within reach of America's outstretched hand, if she desires.

Themes and More Themes

The American practical mind with all its attendant proclivities, finds its counterpart

in the genius of the vanished Maya race. Not that their temples, palaces and residences are suitable or could be adapted in toto to our modern conditions. But the masterful manner in which the Mayas handled mass grouping in bringing into being their majestic conceptions, their execution of stupendous undertakings and the fundamental principals underlying their three, four stories high. They exhibit a prolific use of the serpent motif. They used the roof comb and so on. But when the underlying meaning is explained, when the basic principles are followed step by step, there unfolds a new world of material to serve as themes.

Greek architecture developed in structures of stone from recognizable wooden

FIRST BAPTIST CHURCH, VENTURA, CALIFORNIA
First ecclesiastic structure embodying Mayan motifs. Completed in 1931.
Robt. B. Stacy-Judd, Architect

design motifs, make theirs the ideal works to which this nation may turn for themes acceptable to our modern conditions.

For instance, they had no windows. They built openings either square or with jambs tapering, sometimes until they almost met. In many instances they covered their buildings with a maze of apparently meaningless scrolls. They built monster staircases rising from the ground to the roof, two, frame prototypes. Maya architecture developed along similar lines and its wooden prototype is just as easily discernable.

The Maya esoteric signs and writing glyphs became motifs for wall decoration. The serpent also was conventionalized to such a high degree that it takes its place among the most extraordinary creations of all time.

In building mass and mass grouping these

INTERIOR OF FIRST BAPTIST CHURCH, VENTURA
ROBT. B. STACY-JUDD, ARCHITECT

master minds appealed to the eye in terms of great strength and beauty. They planned with equal skill the structure containing over one thousand stone columns covering about twenty-five acres, and the simple diminutive edifice. They boldly treated enormous areas with elaborate designs in stone and with similar facility executed exquisite stone bas-relief or the most delicate wood carving. They were a commercial, business-like people, with an ideal government. Their deep understanding of rightful living was exemplified in their innate sense of truth in all their planning and design. And, remember, these great people were the First Americans.

To what better masters, then, could we turn?

And dreams! Does the practiced banker, the financial giant or the master mind in any vocation attain success without them? Dreams, intensive application and an abiding faith?

It is my belief that acceptable basic motifs from the ancient Mayan source are available and of practical use on which to found a new style essentially American.

Next month Mr. Stacy-Judd will discuss assigning Maya Art among the Classics, giving his reasons for choosing the Mayan motifs as a theme basis when contemplating an All-American Style.

SAN GABRIEL MISSION, SAN GABRIEL, CALIFORNIA
From Original Etching by Henry Chapman Ford

TOWARD A NUDIST ARCHITECTURE

by

LEICESTER B. HOLLAND

F. A. I. A.

IN RECENT weeks I have been looking through a considerable number of the foreign architectural journals in the Library of Congress and I have been noticing particularly the French interiors—mostly exhibited at various salons I presume, for there seem to be no corresponding exteriors—and the German exteriors, mostly of tremendous housing operations—the interiors of which seem to pass unnoticed.

Many of the pictures are photographs of actually constructed work, some are merely architects' drawings but in one case and the other I have been struck by a curious phenomenon, *there are no scale figures.* Now scale figures have always been one of my hobbies. In College I conceived the greatest admiration for Viollet-le-duc—which incidentally has never died—and as I look back, I am inclined to think that it was his scale figures that first attracted me to the Dictionary. Nor should I be surprised if scale figures did not have a good deal to do with my deciding that Wilson Eyre was the first architect for whom I wished to work. I am sure I have put scale figures in far more rough sketches than there was any warrant for—even being tempted on full size detail sheets to waste what once would have been considered valuable time.

So I was struck perhaps more than another would have been, by the absence of scale figures in modern architecture, and as I looked at picture after picture I began to wonder what sort of figure could be introduced in connection with the exteriors and interiors I was examining.

Quaint Local Costumes

Obviously an ordinary individual in ordinary clothes would not do. The very chic and bizarre French boudoirs and offices *de grande luxe* simply would not tolerate a fashionably dressed woman—such as I knew—or a business man, even in silk hat and silk pyjamas. After much concentrated consideration I came to the conclusion that the only thing for a French interior was one of the curious mannekins to be seen in the windows of ladies' dress shops these days, a sort of fourth dimensional human being projected in three dimensions upon a warped surface. And for the German exteriors the only figure that seemed suitable was a shaved headed man in very freshly washed and stiffly starched overalls.

The strangeness of these conclusions has lead me to consider the importance of the scale figure, and I have come back more

Editor's Note: A post-prandial pronouncement at the annual meeting of the Philadelphia Chapter, A. I. A., and printed in The Octagon for August, 1933.

strongly than ever to a feeling I have had since the days when I read Viollet, that the scale figure is, or should be, the keynote of any architectural design. For architecture, aside from its strictly utilitarian function as a complicated tool to keep out the rain and the cold, is above all a picturesque setting for humanity. It plays a major role in the self aggrandizement which is necessary for man to preserve his status as a human being. Man starts out by being just one of many animals and in many respects a very inferior one. He is not very swift, he is not very strong, his fur is short and ragged, his coloring quite lacking in distinction. His form is aptly described by the name the wolves gave to Kipling's wild boy, Mowgli, the frog. But one thing he has which all other animals lack, self-consciousness; and with it a relentless determination to be and show himself superior to all of them.

Divine Superiority Complex

To the Indian the grizzly is the king of beasts, the eagle king of birds; by cunning he kills them both; he takes the claws of one, the feathers of the other, to show his superiority—no other animal would think of such a thing—and then he adds little spots of red and bright beads and shells and dyed porcupine quills and puts them all upon himself, so that he becomes a very gay and striking object, somewhat absurd perhaps, but very different from any other animal, and in his own eyes far superior. That feeling of superiority is the great gift the gods have given to men.

Life is apparently a boon to all animals, since all struggle to maintain it, but to any of us the life of an animal would seem duller than death. Eating, sleeping, mating, the physical pleasure of exercise, the feeling of triumph in combat perhaps, these are all the pleasures of animal life, and even though human ingenuity refine them to the *n'th* degree, they alone would never satisfy. The joy of life to man is in achievement, in feeling that he has done something no one did before, that he has made or is going to make life better for himself or for others than it has been; and it is the pride in achievement not the achievement itself, that alone makes human life worth living. Glory, honor, industry, self sacrifice, devotion, all spring from this. They are of course all highly artificial sentiments, and perhaps like the red-skin's panoply, somewhat absurd, but humanity has nothing greater.

House Fashions for the Well Dressed

Now when man has adorned his body to magnify himself what does he do next? He adorns his dwelling. Birds and ants build nests, beavers build quite respectable shelters for themselves, but there they stop. Man doesn't. He isn't satisfied with a mere protection from the elements, but he has to decorate it. He paints it, carves his woodwork, sets up porches and colonnades. His plans and structures become constantly more elaborate, partly for convenience and comfort it is true, but more from the urge of the three B's—Bigger, Better, more Beautiful—so that he can be proud of his achievement. When he has made a palace he becomes a lord, when he has made a city he becomes civilized, and if at any time he loses the feeling that he is improving things he begins to revert to savagery. All this is artificial; if it were not there would be in it no sense of triumph over nature; from the spiritual point of view the absurdity that may enter in, matters not at all. Architecture and clothes, in their contempt for nature, are the glories of civilization.

Sartorial Transcendentalism

Some years ago I happened on a curious little book called "Narcissus, an Anatomy of Clothes," by an Englishman, Gerald Heard. In it the author advanced the thesis that in all times there is a close sympathy between clothes and decorative architectural forms. He relates the high, stepped headdress or mitre of the Persians to the ziggourat of Mesopotamia; the chaste dignity of Greek drapery to the delicate fluting of the column; the more complicated forms and rich mosaics of the Byzantine, to the gold and purple of their broader oriental robes. The high peaked headdresses of the women and long pointed shoes in the 14th century are linked to the flamboyant

Gothic, and he points out that the broad hat of Henry VIII and the duck-bill sabletons of the period have just the outline of the four centered arch. In fact Henry's whole proportions are much akin to those of a Tudor window.

It is curious to note the seeming disparity between some of these sartorial monstrosities and the culture of the time. Of all the costumes man has worn I can think of none more absurd than that of Shakespeare—skin tight hose to the thigh, bulging most unanatomically into puffed slashed trunks, small waisted jerkins stiff with ornament, ridiculous short cape with flaring collar, and elaborately starched ruff. And the Elizabethan architecture is almost as preposterous. Yet Shakespeare was the greatest poet and Elizabeth's the greatest age that England has known. Actually there is no conflict, for it was the cock-sure vanity and self-conceit shown in the fantastic clothes that made the golden age; and as long as Englishmen can with perfect composure appear in evening coat and starched white shirt and kilts they will be soberly unconquerable.

Sartorial Deflation

Do the analogies hold for modern times? Development, at least so far as men's clothes go, pratically stopped with the Directoire. Architecture, Heard says, is always a step ahead of costume. Has architecture ceased to develop since the first quarter of the 19th century? At least since that time we have had little consistent developments or very characteristic fashions. The cities have grown with miles of well regimented houses, like sweat-shop shipments of ready made business suits, modified by a feverish eclecticism aping a hundred styles of the past, and that may be paralleled by the women's styles that change incredibly in a decade.

Yes, I think the scale-figure is the key to good architecural design. If the design makes a discord with the man you choose, then the design is bad, and conversely if an actual man looks out of place in an actual building, then he has no business there. Perhaps that is the reason hospitals are so stringent in their regulations about visitors and why visitors feel so nervous in them. The nurses fit beautifully, so do the internes in their fresh white ducks. The patients scarcely count, covered up with sheets, but the visitors are awful; usually they look like something that should be dipped in carbolic acid and cast down the drain as quickly as possible.

What Clothes Modernism?

It seems at last that we may be emerging from the uncertainties and conventions of Victorian architecture, and modernism is all the rage abroad and somewhat the rage here, too. But there are those who say it is a fad, that it will quickly pass or is already passing. If it is a real abiding movement it should foreshadow a change in costume, for it is certain that no modern costume accords with it. What should that costume be? The fundamental characteristics of modern architecture are mass production, rigid functionalism without extraneous ornament, and simple geometrical forms. The most fitting costumes would seem to be something on the lines of the Ammish men, the Pennsylvania Dutch, a uniform consisting of a broad flat hat, straight square box coat and tubular trousers. It is quite proper that no collar should be worn for that is in no way functional, and I am sure Le Corbusier would side with the religious faction that condemns buttons as vain ornament and pins its faith on the hook and eye. Only of course, the uniform should not be black, but white, or perhaps white on one side and black on the other. But uniforms unfortunately are not long popular with mankind, they may exalt the clan but they obliterate the individual; it takes a religious fervor to hold to them. I remember seeing a letter of Paul Cret's at the end of the late war in which he spoke of looking forward to the day when he could "ornate his head with a derby." And modernism is by no means new. Le Corbusier reached this country at least ten years ago. Yet nowhere does there seem the slightest tendency toward a modified Ammish costume. Either the costume must be wrong or the architectural style an aberrant sport.

Cherchez le nu

There is, however, a novel costume which has recently attained considerable popularity abroad, especially in Germany, where modernist architecture has reached its greatest development. It is that of the Nudists. And the Nudist costume has much in common with modern architecture; it is functional, it eschews all ornament, it revels in sunlight. It is not very geometrical, I must admit, but it has the great advantage over any uniform that it is markedly individualistic. The variations, it is true, are not the results of choice, and are quite beyond personal control. But the same seems true of many of the variations in modern architecture. All things considered, I am convinced the Nudism and modern architecture do or should go hand in hand, and that a marked development of Nudism must be the sign that architecture has really and seriously gone modern.

There are difficulties however. The Nudist costume is not universally practical. In summer weather it may be fine, indoors it may be tolerable the whole year round, but on the streets in winter it would never do. And our social organization requires certain marks of distinction between the individuals. How would one know a policeman from a bootlegger? The policeman has to wear a badge even though he has nothing to pin it on. I heard of a man who had dinner with a Nudist family in Germany. The whole house-hold were properly nude of course, only the butler who waited on the table wore white gloves. Such little unavoidable artificialities would break down the whole system in time.

But Gods Need Gauds

And there is another objection, far more fundamental. Nudism in its philosophy is the negation of ornament, the negation of artificiality, and therefore, I believe, the negation of man's pride in his humanity as distinguished from simple animal nature. It is the negation of civilization. Our civilization is far from perfect I admit, and probably it always will be so, but as long as we believe that we are bettering it, our souls are alive. When we decide to give up all civilization utterly, our souls will swiftly die. Nudism, philosophic utilitarianism, contempt for frills and furbelows, even though they deny all known anatomy, all laws of gravity, form the straight path to barbarism and beyond, to savagery and below, for there is no savage that does not deck himself with some quite useless ornament.

All this, I believe, holds likewise true for architecture.

MODERN LINES ARE REFLECTED IN NEW LOS ANGELES VIADUCT

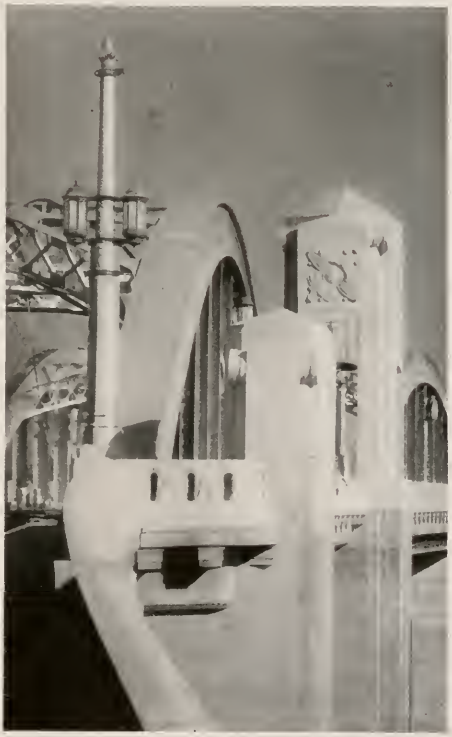
by
LOUIS L. HUOT
Bridge Architect

ON June 16th last there was held an impressive ceremony dedicating the opening of the new Sixth Street Viaduct in the City of Los Angeles. Some of the details of the entrance at the eastern gateway were still unfinished but the paving of the roadway was complete so as to allow a through movement of traffic. The cutting of the ribbon by a representative of the city government marked the beginning of the use of this important avenue uniting the eastern suburbs with the city proper.

The structure represents an investment of nearly $2,300,000, including land. The cost was divided between the City of Los Angeles, the Union Pacific Railway, the Santa Fe Railway and the County of Los Angeles. To provide for future contingencies, the structure was strengthened to permit the future installation of street car tracks, such provision requiring the use of combination trolley poles and light standards in lieu of plain light standards, the railway companies being relieved of any participation in the extra cost of these features considered desirable by the property owners of the district.

In times past, in some parts of the country, the beautification of structures of this type was neglected and in many cases when it was attempted the efforts in this direction yielded a superficial and incidental mass of ginger bread which could have no pleasing offset upon the structure in general.

With the adoption of careful architectural study of the proper proportion of the masses and detail, this idea has given way to an appreciation of the value of design



CENTRAL SPAN, SIXTH STREET VIADUCT, LOS ANGELES

carried to a logical end.

In some respects a viaduct is conformable to the automobile which it carries across the chasm. The public has come to take for granted mechanical efficiency but demands an harmonious and graceful design. Beauty of line and proportions are the best selling points either possesses.

Today no property owner will permit an ugly structure to be established unchallenged in his vicinity even though his own property is used for the storage of junk.

That the Sixth Street Viaduct fulfills all the present day demands is acknowledged by a recent act of the City Council in presenting to Mr. Merrill Butler, who was Chief Engineer of the bridge division of the City Engineer's office while this structure was designed, a richly embossed resolution commending him for the successful design of the viaduct.

A group of more than thirty well qualified engineers worked continuously for many months preparing the plans and specifications for this structure.

Special credit is due Messrs. H. H. Winter, A. L. Enger and L. Blume for faithful and beneficial contributions toward securing a design logical in engineering and convincing in aesthetic appeal.

The finished structure itself by no means fulfilled all the demands for a complete design. A dignified approach of about 700 feet was required to lead from the Whittier Boulevard to the structure and many men whose efforts are not realized exerted their energies toward the removal of obstacles standing in the way of the perfect consummation of this ideal.

The viaduct proper has a total length of 3,546 feet from east to west bulkheads. From street level on the west end it rises on a grade of 4½ percent till it reaches the westerly bank of the Los Angeles river continuing at a practically level grade across the river channel and railway yards which are an average of 70 feet below its

PYLONS, EAST APPROACH, SIXTH STREET VIADUCT, LOS ANGELES
Merrill Butler, Chief Engineer; L. L. Huot, Architect

deck. It comes to rest upon the brink of the plateau on the east.

The roadway on the west is 56 feet in width but before reaching the river span this is narrowed to 46 feet and carried at this width the remainder of the way except that portion over the river channel where a curve unfortunately complicates the situation. There are two curves in this viaduct, the other one being at the easterly end. The roadway is flanked by sidewalks having a width of 5 feet between curb and base of handrail. The 13 inch curb face is a protection to cars jumping the sidewalk.

The river channel is spanned by two pairs of unique steel arches, a shape made necessary by the demands of the railroad companies for certain head room at these particular points. These steel arches rest upon a central pylon which rises to a height of over 110 feet from the foundation raft upon which it rests in the river channel. The ends of the arches rest upon rollers located upon pylons rising at each bank of the river channel and not carried to such a height as the central pylon, thus giving a more pleasing composition.

Where the structure rests against the brow of the hill at its easterly end, two pylons rising some 40 feet above the sidewalk level flank the sides of the roadway and furnish an accent to the structure and a frame for the panoramic view of the city lying away to the west. From this point eastward a roadway of 58½ feet in width leads to the avenue 700 feet away at which point an open gateway is flanked by circular rails designed in conformity with the rail of the viaduct. The roadway is parked and nicely landscaped by the park department and adds much to the pleasure of those using the viaduct.

The lighting of this portion of the approach is accomplished by means of a series of concrete light standards especially designed to harmonize with the viaduct and each carrying a single bronze lantern. In looking at these single standards one

CENTRAL SPAN, SIXTH STREET VIADUCT, LOS ANGELES
Merrill Butler, Chief Engineer; L. L. Huot, Architect

Photo by Luckhaus Studio

CENTRAL PYLON, SIXTH STREET VIADUCT, LOS ANGELES

MERRILL BUTLER, CHIEF ENGINEER; L. L. HUOT, ARCHITECT

Photo by Luckhans Studio

PYLON, FOURTH STREET VIADUCT, LOS ANGELES

MERRILL BUTLER, CHIEF ENGINEER; L. L. HUOT, ARCHITECT

can scarcely realize that they each weigh about 5,000 pounds.

On the viaduct proper use is made of a specially designed concrete light standard and trolley pole combination each bearing two bronze lanterns. These standards form part of the general design and are installed upon piers in the handrail they are adequately reinforced to withstand a horizontal pull of 4,800 pounds applied at a point 26 feet above the sidewalk level.

The handrail upon which these standards rest is of sturdy construction 13½ inches thick at the base and 3 feet, 6½ inches in height reinforced and constructed in a way to reduce to a minimum the tendency to crack which most handrails on bridge structures have a tendency to do.

The method of reinforcing and constructing these rails was developed by the engineering division of the City of Los Angeles after much study and observation.

Wonderful results in the concrete work were secured under the direction of the city's inspection department represented by Mr. Meidroth, resident engineer for the city. The forms for all architectural detail were built to cabinet work specification and precision, employing none but the best white pine timber.

Under the west approach there is a truck tunnel 560 feet in length extending from Santa Fe Avenue to the west river abutment where it gives access to the river channel.

The technical and structural aspects of this viaduct have been fully covered in articles appearing in the technical journals from time to time. Merrill Butler treated this phase of the problem in an article published in a Western Engineering paper, July 10, 1932. The lighting of the structure was described in an article appearing in the Western City, July, 1933.

Inquiry is often made as to the style of architecture employed and to this question I can only say that it does not follow any particular historical precedent, the design is modern in conception and construction. Inspiration for some of the details was derived of course from some of the earlier building styles of architecture.

COMBINATION LIGHT STANDARD AND TROLLEY POLE, SIXTH STREET VIADUCT, LOS ANGELES

CONCRETE LIGHT STANDARD AND TROLLEY POLE, FOURTH STREET VIADUCT, LOS ANGELES

AMERICAN TRADE AND INDUSTRY UNITE FOR BUSINESS RECOVERY

by
HUGH S. JOHNSON

THIS is a milestone in the progress of the President's great plans. The old system of enforced non-cooperation in industry had failed through four dreary years. For a century we had denied to our people the right to participate in any national economic program except through a so-called rugged individualism. The President's idea was that this nation can trust its industries to cooperate to abolish abuses, and it can trust our people to act with them.

Under the Recovery Act, American trade and industry are invited to combine with Government to work out their own salvation. They are asked to take their workers into this partnership and the whole people are shown a way to support this common effort. If ever a great public measure was conceived in faith in the institutions and the people of a great Nation, this is that measure.

Let us go back in our memories half a year. The banks were closed in dread of economic dangers worse than we have ever known. The future was so black with clouds that even the wisest among our leaders saw no light. Factories were closed or were operated only by the daring of their management, and no man could be perfectly sure that six months would still see his family fed and sheltered.

An address delivered at an NRA mass meeting in St. Louis, Mo.

In this murk there were plenty of foolish prophets of disaster. Men talked of a dictatorship. It was freely said that our political structure was in danger and some times that what is loosely called the capitalistic system had completely failed. Such legislation as the Recovery Act was sought by men who now wonder whether we are not so far on the way to recovery that there should be no action at all to avert disaster.

Some memories may be short, but I can never forget the urgings under which, against all my inclinations, I took this thankless and exposed position. There were no more corporals of industry who insisted that decisive and instant action was imperative. There were then not a few, who in the light of what had happened in other countries believed that an economic Czardom was necessary. The Capital was full of cure-alls proposed — not by unknown visionaries—but by some heads of great industrial corporations.

In the midst of this confusion the newly elected President projected a few simple ideas of his own. He dissolved no parliaments and he departed not at all from our Constitutional forms. There is a sort of unconscious irony in a few of the things he did. For almost forty years some men in Industry had complained that it had suffered most of its ills from a statutory denial of opportunity to act in unison. In this crisis he said, "very well—act together, but act with me for the common good."

The Recovery Act is therefore not a regimentation of industry—it is a charter of freedom. It is a simple fact that every single one of the Codes of great industries thus far approved has been agreed to by a substantial majority of all the corporations submitting it. There has been no dictation. The gist of the President's program is co-operation and not compulsion. It was an idea clearly in accord with the very fundamentals of American Democracy, and utterly opposed to the hopeless resorts to dictatorship abroad. If you look at the President's whole Recovery Program, you will find a similar principle running thru every act passed by the last Congress.

The Agricultural Adjustment Act is based on farmer cooperation to reduced production to demand. The various loan and credit Acts involve no imposition of arbitrary control on anybody. There is not in the entire program a paragraph or a principle that departs from the essential idea on which this Government is based.

Growing out of this great effort, there is a distinct stirring of hope throughout this country. That hope is not without substance. Every economic index has moved substantially upward since those dark days of March. Signs of a broad advance are everywhere. The greatest element of recovery is recovery of confidence.

What is it that makes prices go up? Nothing in the world but a popular conviction that they *are* going up.

What is it that makes factory wheels go round?—The simple belief that trade is going to take the output of the plant.

What is it that makes merchants fill their shelves?—Confidence that people are going to empty them.

Why is it that you or I buy a new suit of clothes or an automobile, or have the house painted, or decide to spend a little money on a vacation trip?—just our judgement that we are going to keep our jobs or maybe get a raise in pay.

All that is *confidence*,—faith that things are not as inky black as we thought they were in March—belief that we see through rifts in all our clouds the sunlight of a brighter day.

No man can put his finger on any particular cause, and say that was why this country has been lifted about a quarter of the way out of the March depths since Franklin Roosevelt became President. But any man can be very sure that there was chaos —then swift and intelligent action — and then action—wide improvement so definite and certain that nobody now denies it.

Nobody denies it, but now we are beginning to hear that no action at all was necessary—that improvement would have come anyway—that it would be better now if all these attempts to do something against disaster were abandoned — that what we want now is a return to the old rule of hands off and let the best—or as it not infrequently happened—the worst man win.

This cry comes from some of the very voices that in March were most eager for a virtual dictatorship and were making the halls of the Capitol ring with the *X-Plan* or the *Y-Plan* or the *Z-Plan* for a governmental financing, control, or guarantee of everything and everybody.

> "When the devil was sick the
> Devil a monk would be—
>
> When the devil was well, the
> Devil a monk was he—"

Short memories—short sight—and short sportsmanship. The ship of our national fortunes is headed away from the storm center with a steady hand at the helm; but that is no reason for a change of course or to go back to such rudderless drifting as nearly wrecked us last winter.

Over and over again the President has warned that there is no easy magic to cure evils such as ours. He has presented a close-knit plan—each part dependent on all other parts and no part dependent on lifting the country by its boot-straps. What this plan does is the most that any governmental plan can ever do—to give our people the chance to help themselves—industry, workers, farmers and the public, the President's program says to all, "In *this* way

you can help in our great united effort at recovery." But let us make no mistake. The effort has just begun! It will take time and patience, and work and waiting and continued never-ceasing effort.

There are some slight stirrings of opposition to all this and it will be well to look to whence these efforts come. There was a leadership—in industry and trade as well as in finance and politics—which we followed into the 1929 disaster. It told us that the rule of devil - take - the - hindmost was the way to a practical paradise. It thought we were in a new economic era. The whole of America was enticed into speculation on the Exchanges at prices so high that only a madman making crazy figures on a slate in some barred asylum could justify them. This leadership so vaunted itself that any glance from government in even the direction of what it was doing, was resented as an impertinence. With the whole agricultural population verging toward peonage — with half the business enterprises in the country operating at a loss — with not less than 2,000,000 men out of employment and more being driven out of work every year by a reckless race toward complete mechanization—this leadership stood up and preached unending prosperity because its own minority, gorged with paper profits, was revelling in a fool's paradise and shaking enough of its superflux down into the population to make everybody feel good enough to stand for it.

The memories of these men are short. But it is this very same discredited leadership that is now saying, — *"We are on our way out. The President's Recovery Program had nothing to do with it. Let us abandon the whole thing and go back to the good old days."*

"By their fruits ye shall know them." The President's program is not for them, and they are not for it. As Will Rogers said the other day, if the Administration fails, a good epitaph for its tombstone would be, *"Died trying to do something for the little fellow."*

So perhaps the little fellow's memory may not be as short as others and when he hears this growing and gratuitious advice, it might be well for him to ask, "What advice was this authority giving in 1927, 1928, and 1929?" "Under what flag does he march?"

If this test be applied, I think that—without one single exception—you will find that the few sly and furtive undercuts, the sneers, the sarcasms and the forthright and courageous assaults, all center back to men in some way associated with the policies and practices that led this country to the precipice of 1929 and that as we all now know—have dragged us through four years of as grievous trouble as ever plagued a people.

The President's program may be subject to criticism and nobody in this administration that I have seen resents criticism — honest, forthright and constructive criticism. They welcome it, they seek to profit by it, and frequently call upon the critics to join the procession and try to put their thoughts to helpful effect. I have seen that happen more than once. It is the most open forum I have ever known in Washington. There is less attention to partisan politics than there was under Woodrow Wilson in the War—and that was almost none. I do not even know what the politics of some of the leading figures of N.R.A. may be I only know that we have no political leaders of any stamp and that without exception, they regard Franklin Roosevelt as an inspired leader, believe in what they are doing, and can be counted on to carry out the President's policies to the limit. They think that this is a crisis in our country's affairs and they are working as I have never seen men work — even during the war—to translate those policies into action.

I do not need to tell you this—you can see it in your own city. You can see it from one end of this country to the other. Without regard to politics, race or creed, our people are trying to pull together on the first popular, cooperative and consistent program that has ever been given to this country.

So I do not wish to be misunderstood as coming here to resent criticism. But I do believe that it is right to call attention to

misunderstanding and to misrepresentation of men who stand (and who always have stood for the very reverse of what this Administration is trying to do.

It is wrong to say that Industry is being shackled or put in a straight jacket. The fact is that Industry is being freed.

It is wrong to say that the people of this country are being incited to a boycott. The fact is that they are being given a chance to join with the vast majority of employers who are cooperating in a national movement to a common end. It is wrong to say that any small or distressed enterprise is being forced to take a dose it cannot swallow. The fact is that there is ample relief for any *bona fide* case of hardship justifying exception. It is wrong to say that there has been resort to intimidation. The fact is that not one penalty has been imposed and not one individual coerced into doing anything. It is wrong to say that this Administration has given itself over to the aims of any group in derogation of the rights of any other group. The fact is that it has a law to execute and that its duty is to execute it without the slightest deviation for favor to any group—and that it is doing that duty.

We have made mistakes. We will make more mistakes. Whenever we have made a mistake we have frankly said so and corrected it. We shall continue to do this. We want criticism. We are constantly seeking it and trying to correct our errors when criticism reveals them.

We know that we cannot quickly or completely do all that a distressed people would like to have us do. We only know that we are following the plan prescribed for us by the President. We know that it has raised wages and put people to work and increased purchasing power and helped to turn factory wheels and increased the market for farm and factory products. We know that it has abolished child labor and flooded schools and restricted sweat shops and given women a better break. We know that it offers a way to stabilize industry and restore profits and improve such sick industries as the Bituminous Coal and Textile Industries. We know that it has afforded people a greater sense of security and given to thousands and thousands of N.R.A. women and consumers a feeling that they need not sit dumbly by, but that they have an active part in the plan the President has drawn to combat this depression. We know that somehow the President's great plan—of which N.R.A. is but a part—has put new heart of hope into a whole people and if we did not know it otherwise this greatest of demonstrations in the metropolis of the whole world would tell us so in language louder than words and with a poignancy that would thrill the heart of a brass image.

All this is — for the whole American-people—to lift up their heads and hearts—to live, and work, and fight again; and if Franklin Roosevelt and his understanding, human, vibrant, American plan of recovery never did anything more than this, it would have been enough to make his Administration a landmark in our history, and —as we believe—to defeat this depression. A people inspired by faith can do anything—and he has restored faith.

Who would have dared to prophecy that a scant tribe of gaunt Arab horsemen out of Medina could over-run nearly the whole of the old Roman Empire—or that a handful of Mongol nomads, during the life of a single man—and because of him—could carry its horse-tail banners in victory from Peking to the Danube—or that a destitute French rabble would dominate Europe?

There is nothing that this people cannot do if their form and administration of government only permits them to do it. All they need is confidence and faith and if this gathering means anything—if similar gatherings that I have seen in Chicago, Detroit, St. Louis, Cleveland and Washington mean anything and if the whole of our vast correspondence from all across the country mean anything—and what is more to the point — if the growing figures of wages and employment mean anything—we have that confidence and faith in Franklin Roosevelt and what he stands for to an extent that we have never seen in our lifetimes and that I believe never existed in this country before.

LONG BEACH MASONRY — A PLEA FOR BETTER DESIGN AND SUPERVISION

by
RALPH McCOY,
With Department of Building
Inspection, Oakland, California

THE destructive effect of a serious earthquake while often a bitter experience to an unfortunate city located within its zone of influence, should even be made to yield a valuable by-product through its many practical tests of building materials and methods of construction. The building industry has been well supplied with information resulting from a study of earthquakes. First by newspaper accounts, followed by reports of investigators, then articles in trade journals and technical magazines, and finally with the useful data compiled by authorities and published in standard texts for reference. To observe the influx of talent in the wake of an earthquake representing as it does, government agencies, universities, building departments, architectural and engineering societies, fire underwriters, building material groups and others, one could reasonably assume that such an experience would be promptly followed by corrections in design theory and construction practice sufficient to prevent all future damage by similar shocks. But building custom does not respond so readily to change. This may be illustrated by a study of the March tenth disturbance in Southern California.

Long Beach, which suffered damage in excess of forty million dollars, is truly a modern city. Ninety per cent of its one hundred and fifty thousand population have been assembled since the San Francisco earthquake and fire of 1906, and two-thirds of its buildings have been constructed within the last twelve years. In fact, nearly all buildings of the Long Beach area could have benefited by lessons learned at San Francisco, Tokio, Santa Barbara and elsewhere. And a majority of its buildings did pass through the recent "shake" without serious damage. Among these are found nearly all structures of fire-proof types and many other buildings of all types and materials whose design and construction indicated proper architectural and engineering guidance. But many hundreds of buildings when subjected to an earthquake of destructive intensity, suffered damage ranging from a falling of fire-walls to an utter collapse. And to study these wrecks, to observe their exposure of incompetence in design and workmanship, the apparent absence of proper supervision and in many cases a disregard of all factors except the item of first cost, one is persuaded that the punishment of former earthquakes has had but little influence on the building of modern cities. Moreover, the failures at Long Beach are largely a repetition of similar troubles in the past which are traceable to violations of certain accepted fundamentals in building construction.

The behavior of buildings under earthquake test is a large subject that should receive more attention by the building industry. Every type of modern wall bears testimony to a need for correction of detail in design or assembly. Each building material group has its problems to work out

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and to this end, the underlying reasons for success or failure of construction should be carefully analyzed, be properly evaluated and, may we hope, be made the basis for establishing more trustworthy methods for the future. Failures of brick and hollow tile masonry were much in evidence throughout the disturbed area and while our study of "how not to build" may be furthered by hundreds of examples in masonry we should realize that this is largely due to the preponderance of brick construction throughout the district. It was also observed that while reinforced concrete structures always showed evidence of technical direction by architects and engineers, that brick was usually the choice of those builders who worked without adequate plans or professional supervision. In brief, there was more damage to masonry because there was more masonry and less competent effort to prevent failure.

Destructive Effects on Masonry

Fireplace chimneys built on the outside walls of wood frame dwellings were thrown down and usually independent of a building collapse. Ties were never adequate to prevent a battering effect between masonry and the adjoining frame. Interior brick chimneys sheared off at the roof line but did not wreck the roof frame nor fall through the sheathing. Falling brickwork usually shattered, thus indicating a lack of cement in the mortar. A one tier, four inch wall without flue lining was the typical chimney construction. Porches of masonry and concrete were built to wood frame dwellings and many of these remained intact even when a collapse of the wood stud underpinning lowered floor joist to the ground. Wood frame buildings faced with brick veneer either shook off the masonry or racked it beyond an inexpensive repair.

Solid masonry wall construction when unrestrained by a steel or other rigid frame, came through the shock usually with signs of distress and with a great many examples of total collapse. The more serious losses were found in buildings having wood framed floor and roof systems inclosed by brick bearing walls. Many stores, apartments, churches and important schools were included in this classification. All high parapet walls unsupported by a steel frame or other reinforcement were thrown to the ground. Facing brick and ashlar was often released from common brick backing, exposing inadequate means for bonding between tiers. Stone, concrete and other heavy ornament were readily stripped from walls and proved a hazard to safety, particularly around building exits. Vertical and diagonal fractures of solid walls were noticeable at corners of many buildings and every octagon, or bay window return, was broken out.

Many one story walls remained intact to the ceiling line but threw off the roof gables and parapet walls above. Two and three story bearing walls usually held to the second floor joist but were often battered out above that line. Steel lintels and reinforced concrete belt courses, while evidently of considerable value to the walls below, often appeared to provide a line of shear for the masonry they supported. It was observed that a great number of masonry bearing walls came through the shake with little or no damage, but in most instances it was evident that such buildings were benefited by the work of competent designers and protected from speculative builder methods. Enclosure walls, panel walls, and curtain walls of unit masonry, when serving with well designed structural steel or reinforced concrete frames, constituted a construction that appeared free from the difficulties observed with other systems.

Causes of Masonry Failures

The destructive effects of earthquake forces upon buildings are often observed as a failure of details. While roof trusses, columns, beams or other assemblies of the structure may be found to violate many of the cherished laws of design, the earthquake usually fails to expose these faults and more often finds a critical weakness in connection details or perhaps where a lapse in supervision has permitted cost saving short-cuts through a contractor control of construction. A joist anchor of poor design coupled with an inadequate bracing of interiors, contributed very heavily to the total loss at Long Beach. The fire-cut

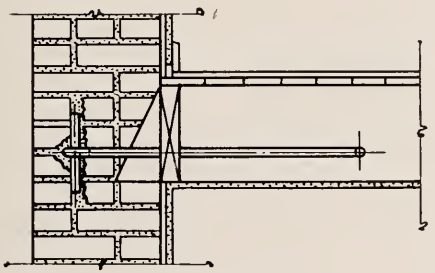
bevel at ends of joist also helped to shear through the masonry at floor and roof lines. A sketch is submitted to illustrate this troublesome combination, together with a proposed modification of the details, directed toward a correction of the difficulty. It is obvious, however, that the masonry wall is dependent for lateral support upon returns in the wall line or else by diagonal bracing of interior partitions. For without such restraint the building is subject to collapse like a box without ends.

Thin walls, poor mortar, and an absence of reinforcing steel also combined to the detriment of Long Beach masonry. While stronger brickwork is readily attainable with modern brick and Portland cement in the mortar mix; and while thin walls are made possible by the use of steel instead of thickness; brick constructors have attempted to enjoy the economy of thin walls but to save the cement and omit the steel. The net result of such a process is failure. Time has attested to the merits of masonry; even to brick dried in the sun and laid up with mud as a mortar. But such walls proved stable by virtue of their mass and this mass should only be reduced by an adequate reinforcement of better materials.

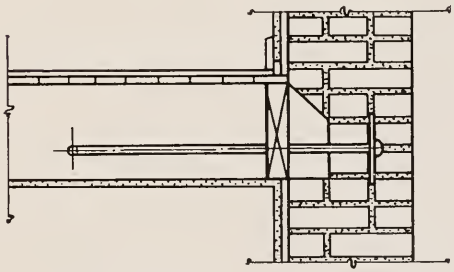
A study of earthquake wrecks revealed a general lack of cooperation between parts and materials. Flexible interiors of buildings greatly magnified the earthquake movement, quickly released the more rigid masonry walls and then literally battered them down. Wood frame structures appeared to express satisfaction after shaking off masonry chimneys and brick veneer. And there was evidently something malicious in the manner common brickwork threw facing brick to the ground. The bonds between tiers of brickwork however, often departed from accepted masonry standards and were replete with lessons on inadequate bond. Longitudinal movements of walls, also actuated by the sway of interior frames, caused serious ruptures at building corners. These breaks often exposed lines of weakness produced in the wall by leader pipe chases and often by window openings. Such breaks gave clear indication of the need for steel reinforcement around all masonry corners, particularly at floor and roof levels and at the head and sill lines of windows.

Remedies Recommended

Of first importance toward a control of earthquake forces appears the construction of rigid building frames. While a limited flexture in first story columns is advocated as necessary for certain types of buildings, great damage has often resulted where inadequate restraint against horizontal movement permitted a distortion of the building frame. This was particularly prevalent in masonry buildings having wood frame interiors. For such a type,



TYPICAL
JOIST ANCHORAGE



MODIFIED
JOIST ANCHORAGE.

diagonal bracing should be provided in the floor and roof systems in addition to a thorough bracing of all stud partitions. To this end, steel strap tension ties could probably be made more effectual than the customary, cut in, braces of wood.

Secure anchorage, provided at all critical points, should be designed to promote rigidity in the structure and be capable of preventing a separation or other independent movement between parts. Column steel or other vertical reinforcement should continue to the top of masonry parapet walls and tie in with horizontal rods laid in wall copings or in the top mortar joints of masonry. The height of parapets could well be lowered to a compromise between fire and earthquake requirements. Cast stone and other superficial ornament, when considered from the earthquake viewpoint, loses much in architectural merit and, unless abandoned for walls of lesser weight and greater simplicity, should be provided with anchorage seldom used in present day building practice.

Masonry construction permits great flexibility in architectural design but is successful structurally, only as it conforms to certain uniform and well established building principles. This construction can therefore be best protected by a building code which definitely standardizes its materials, methods and all important structual details. Furthermore, such code provisions, to be effective, must be supplemented by an adequate official inspection at every critical stage of the work; the larger jobs being under continuous control by competent superintendents who are licensed by and accountable to local building departments.

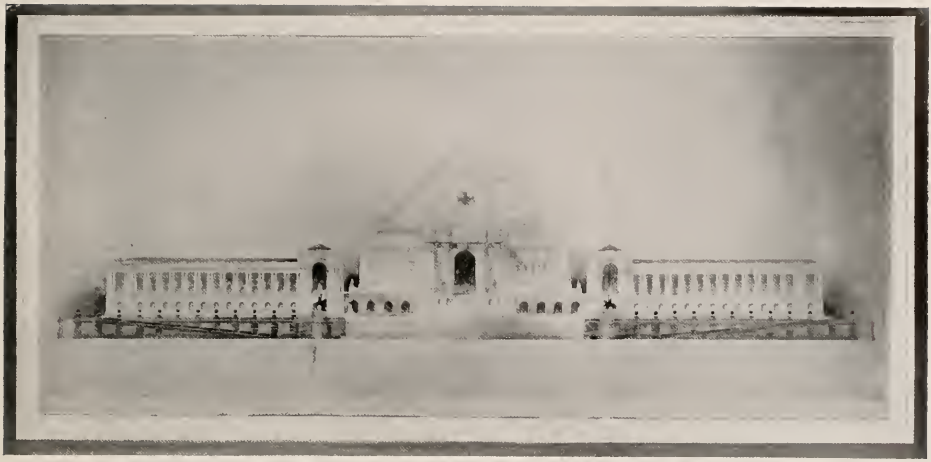
Further Development

Structural and reinforcing steel have had a profound influence on the development of modern buildings. But while brick masonry was first to profit by the use of reinforcing steel,* it afterward largely abandoned this development and has continued to compete with more modern rivals, as plain brickwork; benefited at times by improvements in the quality of masonry materials, but progressively injured through its efforts to follow the trend toward the thinner, lighter and cheaper walls made possible to other materials, only through application of the reinforcement principle. Much worthy effort is again being directed toward the development of reinforced brickwork, and the resulting data gives promise to constructive changes in masonry methods, particularly to structural applications in columns, beams, and even in floor systems. Brick walls however, which absorb the major part of clay tonnage, appear to receive but little benefit from the recent research. Moreover, a solution to the wall phase of the reinforcement problem would provide a needed safeguard at the point of greatest weakness, and would thus remove the present handicap to masonry in the thin wall field.

The inherent permanence, strength and beauty of brickwork, together with its great utility, saving of forms, ease of alteration and final salvage value are well established, and these qualities have long combined to promote the use of brick. The writer is persuaded that the structural safety of brickwork can also be attained by the use of steel properly placed to restrain the walls against distortion. To this end it is recommended: That most effectual resistance to both horizontal and vertical movements of a building can be accomplished by diagonal bracing, placed longitudinally in the walls and transmitting their stresses directly to the structural frame. Such bracing being supplemented by horizontal reinforcement, laid in mortar joints, and designed as a lateral tie between brick tiers and a continuous bond around wall corners.

An eminent seismologist has recently summarized the principle of earthquake resistance as "unity of construction and rigidity of structure." Wall reinforcement as herein outlined, conforms substantially to this principle. It further recognizes that rigidity is a function of the frame and not primarily of the walls; that the duty of the frame is to resist; the wall requirement is "to stick together and hang on."

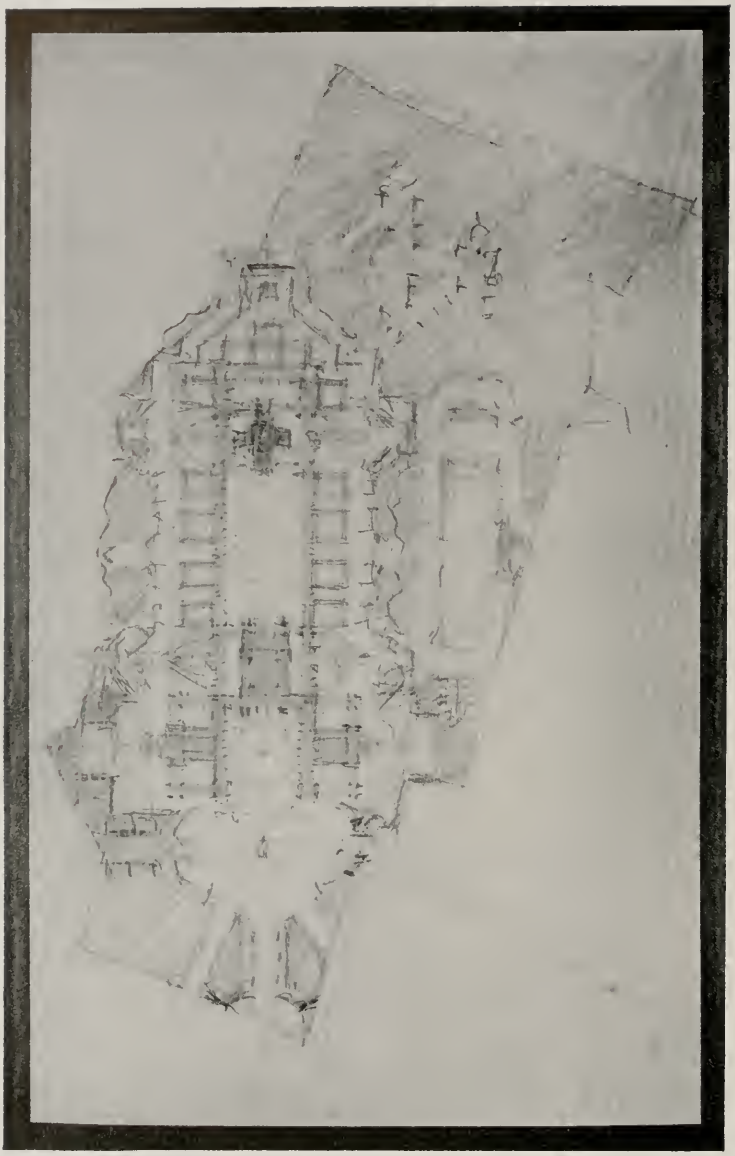
* Developments in Reinforced Brick Masonry by James H. Hansen, Volume 59, Number 3, Proceedings Am. Soc. of Civil Engrs. also Reinforced Brickwork, by Mason Vaugh, University of Missouri, Bulletin Vol. 29, No. 37.



ELEVATION OF THE AUDITORIUM, LIBRARY AND MUSEUM GROUP

Progress Studies in the Final Competition for the University of California

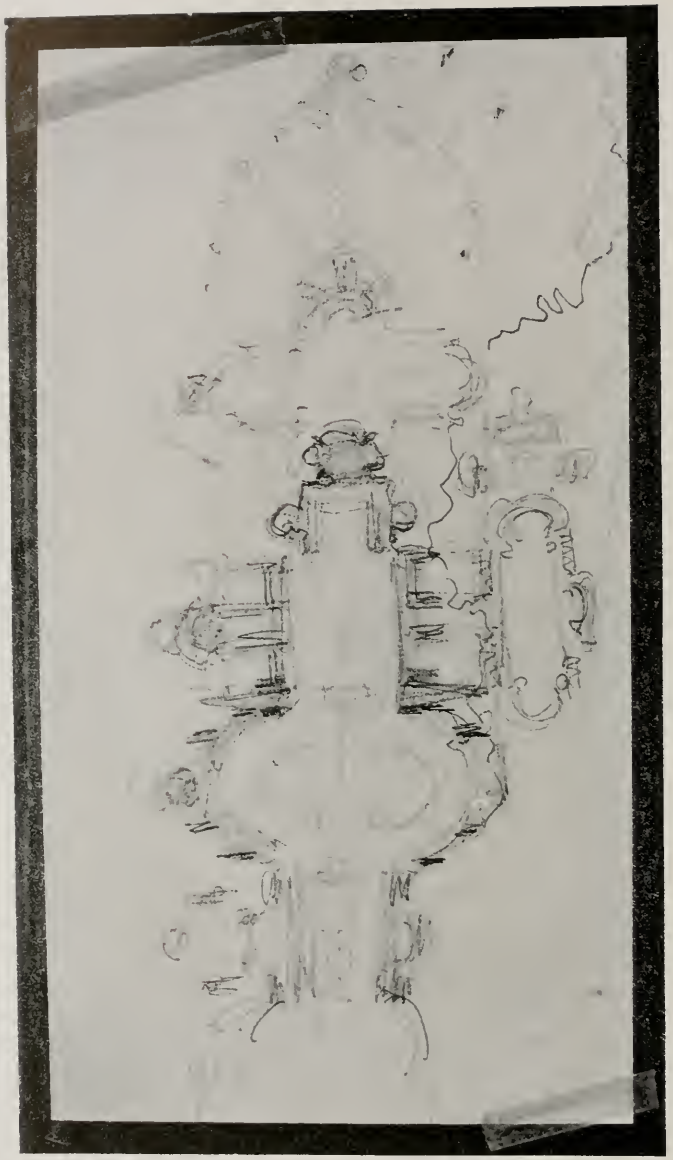
Howard and Cauldwell, Architects



COMPETITION PLANS FOR UNIVERSITY OF CALIFORNIA
FREE HAND SKETCH BY JOHN GALEN HOWARD

COMPETITION PLANS FOR UNIVERSITY OF CALIFORNIA

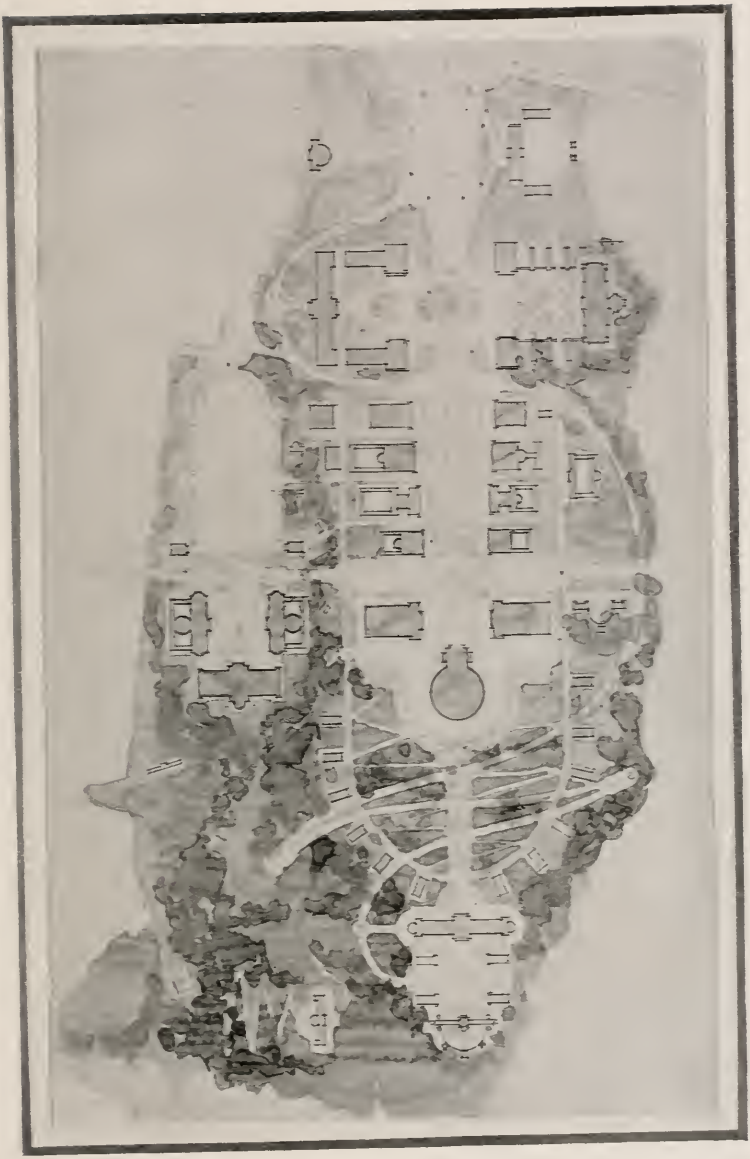
THIS PLAN DEVELOPED BY MR. HOWARD FROM SKETCH ON OPPOSITE PAGE



COMPETITION PLANS FOR UNIVERSITY OF CALIFORNIA

FREE HAND SKETCH BY MR. HOWARD

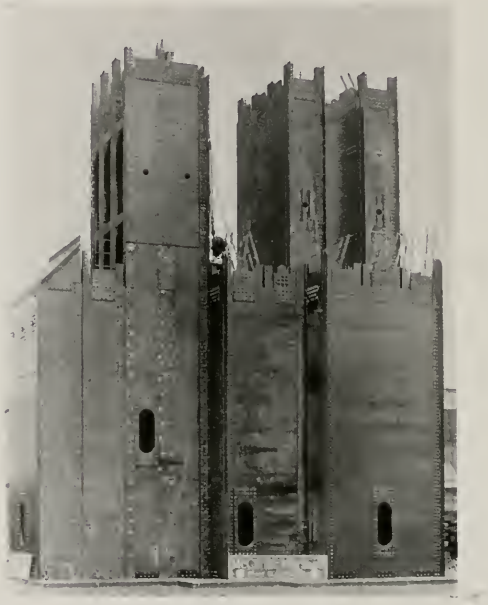
FIRST SUGGESTION OF THE FINAL SCHEME WITH LIBRARY AND MUSEUM GROUP



COMPETITION PLANS FOR UNIVERSITY OF CALIFORNIA

THE SCHEME AS FINALLY PRESENTED BY HOWARD AND CAULDWELL

Engineering and Building Construction



TRIAL ERECTION, BOTTOM PORTION OF EAST LEG OF MARIN TOWER
Height fifty feet, weight 750 tons

FEATURING PROGRESS WORK ON THE GOLDEN GATE BRIDGE
San Francisco to Marin County, California

Courtesy of Joseph B. Strauss, Chief Engineer

MOONLIGHT VIEW OF SOUTH TOWER, GOLDEN GATE BRIDGE

RENDERING BY CHESLEY BONESTELL

CONSTRUCTION STARTED ON MARIN TOWER, GOLDEN GATE BRIDGE

TWO of the most spectacular steps in the construction of the Golden Gate Bridge at San Francisco are to be taken this month when erection of the 750-foot high Marin tower is commenced and workmen on the San Francisco side of the Gate undertake the building of the mammoth sectional steel fender that will protect the San Francisco pier.

Pier excavations on the San Francisco side have been completed to a depth of -95 feet and the derrick barge which has been operating at the end of the 1125-foot temporary trestle has been moved eastward to prepare the anchorages for the fender sections.

For several weeks work has been under way on the fender sections and the pneumatic pier caisson at the plant of the Moore Drydrock company in Oakland.

Many tons of material both for the caisson, itself, and the fender, have been fabricated and the material will be delivered at Fort Point as needed.

Caisson Work is Hazardous

In the meantime giant air compressors have been installed at Fort Point and everything is being put in readiness for the beginning of the caisson work. In this connection it is of interest to note that elaborate safety measures are being taken and nothing is to be left undone to protect the lives of the caisson workers in their hazardous occupation. To this end numerous conferences have been held between officials and engineers of the Golden Gate Bridge and Highway District, the State Industrial Accident Commission and the Pacific

Bridge Company, pier contractors.

Special regulations have been formulated, following lengthy communications with Dr. Nathan Levy, of New York, one of the world's foremost authorities on compressed air, who was responsible for safety legislation in connection with the caisson workers on the Hudson Tube, George Washington Bridge and other important enterprises in the Empire state, involving the protection of workers under compressed air.

Marin Tower of Special Interest

With these important developments under way, work on other units of the bridge is progressing at a gratifying pace.

Since September 1, the base blocks of the San Francisco anchorage have been completed, thus eliminating any danger of slides in the deep excavations back of Fort Winfield Scott when the rainy season arrives.

On the Marin side of the Golden Gate the base blocks have long been completed and the giant eyebars and girders which will hold the cables to the anchorage have been set in place and are now undergoing final alignment and adjustment preparatory to being imbedded in concrete.

Of unusual interest are the preparations for the erection of the steel tower on the Marin side. These involve the grinding down of the top surface of the Marin tower to within one thirty-second of an inch of a true horizontal plane.

This work is being carried on by the McClintic-Marshall Corporation, steel contractors, and necessitates the use of specially designed grinding machinery that has been perfected for the purpose by the contractor. Two shifts of men are working on this grinding process.

Already 8527 tons, or approximately 40 per cent of the steel for the Marin tower, is in transit or on the ground, while the balance is being fabricated in the various plants of the Bethlehem Steel Corporation, at Sparrows Point, M. D., Bethlehem, Lebanon and Steelton, Pa.

At the same time the Pacific Coast Steel Company has started rivet production on the initial order of 900 tons. The manufacture of these rivets is a contract requiring the highest degree of accuracy and their

production called for the installation of special dies and other machinery.

"Dead" Rivets in Steel Work

The specifications require "dead" rivets in all the steel work of the bridge, their production involving many features of precision never before embodied in this sort of work on the Pacific Coast.

Steel for the Marin tower is being stored in the Alameda plant of McClintic - Marshall upon arrival and when erection commences it will be transferred as needed by barge to Lime Point. Since many of the individual steel members weigh as much as 82 tons, it was necessary to erect heavy steel cranes and install special hoisting machinery for its handling both at the Alameda storage yard and on the cofferdam at Lime Point.

This equipment was brought here from New York, where it was used in the construction of the George Washington Bridge.

While foundation, anchorage and steel contracts are under way, work is proceeding on the manufacture of the cables at the John A. Roebling's Sons plant, Trenton, New Jersey.

Here steel billets are being rolled and 960 tons of wire already have been drawn, in readiness for shipment to San Francisco. The figure of 960 tons represents about two per cent of the total cable wire.

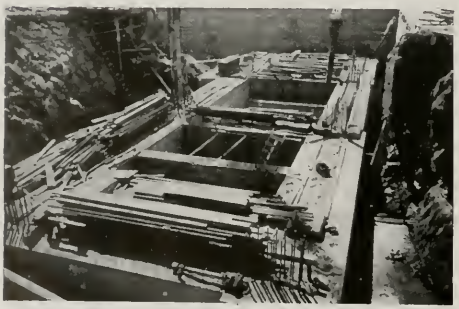
Prominent Engineers in Charge

Russell G. Cone who has been named resident engineer, has had broad experience in the construction of bridges in various parts of the United States. As resident engineer on construction of the central section of the Delaware River Bridge, Philadelphia, Mr. Cone was in charge of the erection of the suspended structure, construction of the roadway, installation of electrical equipment, wrapping of main cables, erection of miscellaneous work and final painting.

Prior to that he served as junior engineer on construction of main piers and anchorage foundations and assistant engineer on erection of the main towers, main cable anchorage, cable beds and suspenders of the same bridge.

Mr. Cone acted as resident engineer for the firm of Modjeski and Chase on the construction of the Ambassador Bridge across the Detroit River, Detroit, Michigan, — a suspension bridge with a main span of 1850 feet, at that time the longest span in the world. He had full charge of the construction of the bridge, its approaches and buildings for operation.

R. B. Alsop, superintendent in charge of caisson work for the Pacific Bridge Company, has had wide and varied experience in deep foundation and air work for the Foundation Company of New York City. He started as time-keeper in 1909 with the Foundation Company. Some of the most important deep caisson work on which he served included a huge bridge at Bath,



PYLON BASE 132 FEET LONG, 32 FEET WIDE
COMPLETED PYLON WILL BE 230 FEET HIGH

SAN FRANCISCO ANCHORAGE. THREE POURS
COMPLETED ON THE WEST BASE BLOCK

A STREET IN CYPRUS
SKETCH BY W. R. YELLAND, ARCHITECT

Me.; Ambassador Bridge, Detroit, Michigan; Union Trust Building, Detroit, Michigan; and the electrification of Pennsylvania Railroad from Long Island City to Trenton, New Jersey.

BRIDGE HAS GOOD ARCHITECTURE

The Golden Gate Bridge is unique in that its architectural treatment was assigned a position of primary importance—nor was beauty sacrificed to arbitrary design standards and rigid economy.

The structural conception as a whole is adjusted to its scenic environment and is carried out in full symmetry longitudinally and transversely.

The bridge is perhaps the first in which the importance of the new motif of stepped-off towers has been recognized and applied.

The bridge is also the first in which the network of transverse bracing between the tower posts is eliminated and the towers portal-braced throughout, making the tower effect that of a majestic doorway.

COFFER DAM IN OPEN SEA

The San Francisco pier is the first bridge pier to be built in the open sea under new methods specially devised, and chief among which is a unique steel and concrete cofferdam, built in place, section by section, 30 feet thick at bottom, with its top 15 feet above water, remaining in place as a permanent fender to enclose the pier and protect it from possible impact of passing ships.

The piers proper are huge concrete monoliths, carried out architecturally to match the accentuated vertical lines of the tower posts and the structure as a whole.

The anchorages, with their towering concrete fascia walls, and their concrete pylons, 250 feet in height are as impressive and striking architecturally as the main towers.

BRIDGE NOTES

There are 261,000 cubic yards of excavation required for the piers and anchorages and for the daylighting of the Marin side span, and 250,000 cubic yards more in the remaining construction.

THE GOLDEN GATE BRIDGE AND HIGHWAY DISTRICT

111 SUTTER STREET BUILDING - SAN FRANCISCO

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Milton M. McVay	*Del Norte County*
R. H. Trumbull	*Marin County*
Harry Lutgens	*Marin County*
A. R. O'Brien	*Mendocino County*
Thomas Maxwell	*Napa County*
George T. Cameron	*San Francisco County*
Wm. P. Filmer	*San Francisco County*
C. A. Henry	*San Francisco County*
Francis V. Keesling	*San Francisco County*
Warren Shannon	*San Francisco County*
Wm. P. Stanton	*San Francisco County*
R. J. Welch	*San Francisco County*
Frank P. Doyle	*Sonoma County*
Jos. A. McMinn	*Sonoma County*

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R. H. Trumbull	*Vice-President*
James Reed	*General Manager*
W. W. Felt, Jr.	*Secretary*
George H. Harlan	*General Counsel*
John R. Ruckstell, C. P. A.	*Auditor*

——ENGINEERS——

Joseph B. Strauss	*Chief Engineer*
O. H. Ammann	*Consulting Engineer*
Charles Derleth, Jr.	*Consulting Engineer*
Leon S. Moisseiff	*Consulting Engineer*

The construction period of the bridge is four years and the man hours of work will be 9,700,000 in the mills and shops; 2,000,000 in the mines and quarries; 6,600,000 in field work; 5,600,000 in transportation of materials; 300,000 in cement mills and 800,000 miscellaneous.

The bridge incorporates modern lighting effects as a major element of design. The cables are to be outlined in lights their entire length and the towers are flood-lighted, making the electrical display at night a brilliant and impressive spectacle.

The bridge towers will be surmounted by aerial beacons and provision has been made for possible utilization of these towers as radio broadcasting.

The bridge will have a regular United States lighthouse station — probably the first of its kind in the world.

CODE FOR ENGINEERS IN CONSTRUCTION

THE supplemental code drafted by the American Society of Civil Engineers under the master code for the construction industry, and submitted to the National Recovery Administration at Washington, applies only to those engineering groups whose work is wholly or in part in connection with construction.

Engineers are classified for the purposes of the code as either professional engineers or engineering assistants, the latter including any person not registered or licensed to practice engineering, or not eligible to membership in any of the principal engineering societies, who is employed to render technical or other services of a subprofessional nature under the direction of an engineer. No attempt is made to fix fees for professional engineers. Minimum salaries for employed engineers and wages of engineering assistants will be determined regionally. Maximum hours of employment will be those fixed by the master code of the construction industry.

The text of the code follows:

CODE FOR ENGINEERS IN CONSTRUCTION

Preamble

The American Society of Civil Engineers, organized in 1852, a national association representing the Profession of Civil Engineering, pursuant to the intention of the Engineering Profession, in so far as the practice of engineering profession is a function of the Construction Industry, to cooperate with the President of the United States in effectuating Title No. 1 of the National Industrial Recovery Act, during the period the emergency, hereby recommends and submits for approval pursuant to Section 3 or said Title, the following Code of Fair Competition covering relations between professional engineers, clients or employers, employees and others in respect to all construction work; this Code having been subscribed to by duly authorized representatives of the following professional engineering organizations:

In submitting this Code for the approval of the President and in tendering their agencies for the enforcement thereof, the American Society of Civil Engineers and the other organizations subscribing above declare:

a. That they are truly representative of the engineering profession in so far as it is functional to the Construction industry;

b. That they impose no inequitable restrictions on admission to their membership;

c. That this Code will not permit monopolies or tend toward excessive fees or wages, but will tend towards fair fees and wages and the eradication of unethical and unfair practices such as "bid-shopping" and enforced unfair competition between engineers, and towards the establishment of better professional standards of practice;

d. That this Code is intended to eliminate unfair competitive practice and to advance the public interest and engineering standards, and to improve standards of working conditions and living, and effectuate the spirit of the policies set forth in the National Industrial Recovery Act.

Article I—The General Code

The Code of Fair Competition for the Construction Industry, as approved by the President of the United States, is adopted and made a part hereof and shall be attached hereto, and any provisions of this Code of Fair Competition for Professional Engineers which may be inconsistent therewith shall yield thereto.

Article II—Definitions and Functions

Professional Engineer—In the meaning and application of this Code a professional engineer shall be considered to be and include an individual, partnership or engineering corporation legally operating in responsible charge of the design or supervision of construction work;

or a person in the employ of the same and who is registered or licensed in accordance with the provisions of law to practice engineering, or any subdivision thereof, within any State or Territory of the United States;

or any person admitted to, or eligible by reason of technical training for admission to membership in any national, state or regional professional engineering organization, in grades which require, as a constitutional provision, active practice as an engineer for not less than seven years and responsible charge of engineering work for not less than one year; active practice and responsible charge of engineering when functional to the construction industry to be determined as defined in the Constitution of the American Society of Civil Engineers.

Where used hereinafter the word "engineer" shall be constructed as an abbreviation of the term "professional engineer" as herein defined.

In the meaning and application of this Code the functions of an engineer shall include the economics of, and the use and design of, materials of construction and the determination of their physical qualities; supervision of the construction of engineering structures; the investigation of the laws, phenomena, and forces of Nature; when any of the same are involved or employed in connection with fixed works for

any or all of the following divisions or subjects: irrigation, drainage, water power, water supply, flood control, inland waterways, harbors, municipal improvements, railroads, highways, tunnels, airports and airways, purification of water, sewage, refuse disposal, foundations or sub-structures, framed or homogeneous structures, buildings and bridges; they shall include the investigation of, the design of, and the selection of the force-resisting and load supporting members of structures; such as foundations, walls, columns, beams, girders, slabs, trusses, and similar members; and the investigation of, design of, and selection of mechanical, electrical, or sanitary component parts of structures; where such investigation, design and selection requires a knowledge of engineering laws, formulae and practice, a knowledge of the physical properties of the materials used, and a knowledge of the methods used in their installation; and the supervision and coordination of the design and execution thereof. Anyone performing any of these functions shall be considered an engineer subject to all the conditions of qualification and experience in the above definition of a professional engineer, and subject to all conditions and regulations of this Code.

Where a Professional Engineer registration or license law is in effect, any registered or licensed professional engineer shall be entitled to practice as an engineer but shall not be relieved by that fact from any of the provisions of this Code.

Engineering Assistant—In the meaning and application of this Code an engineering assistant shall be any person who, not registered or licensed by any state, or territory to practice engineering as a profession and not eligible for membership as hereinbefore defined in any professional engineering organization providing for membership as hereinbefore described, is employed to render technical or other services of a sub-professional nature under the direction of an engineer.

Client—A client shall be an individual, firm, corporation, or governmental agency, who engages the services of an engineer on a fee basis.

Employer—An employer shall be any individual, firm, corporation, or governmental agency, who engages the services of an engineer or an engineering assistant on a salary or wage basis.

Contractor—A contractor shall be any individual, firm, corporation, or agency contracting to perform the work called for by the engineer's plans and specifications.

Article III—Required Provisions

Engineering assistants shall have the right to organize and to deal collectively, through an agency or organization of their own choosing, with an employer.

No engineering assistant shall be required to join or affiliate with any agency or organization, nor shall he be compelled to deal with an employer through such channels. Neither shall he be restrained from voluntary affiliation with, or use of, any agency or organization.

Each engineering assistant shall recognize the contractual relations of employer and employee and failure to render in full the services agreed upon shall be considered as a violation of this Code.

In filing this Code, it is agreed that, as a condition of approval, the President may impose such conditions, modifications, or additions, exceptions or exemptions as he may deem necessary or expedient in the public interest to effectuate the policy established in Title I of the National Industrial Recovery Act.

a. Minimum Wages—No engineer or engineering assistant, employed on a salary or wage basis, shall be paid less than the minimum rates which are established regionally or locally by mutual agreements between truly representative groups of employers and employees or as established or approved by the National Control Committee, as defined in Article VII, through its subordinate regional, state or local committees, and approved by the President, as provided by Section 7 (b) of the National Industrial Recovery Act. Where such rates are not so established, the minimum rates of wages shall be not less than those required by Article 3—"Minimum Wages of the 'Code of Fair Competition for the Construction Industry.'"

b. Maximum Hours—Maximum working hours for engineering assistants shall be in accordance with Article 4—"Maximum Hours of the 'Code of Fair Competition for the Construction Industry.'"

c. Age Limit—Engineers shall not employ any one less than sixteen years of age, except that persons between fourteen and sixteen may be employed for not to exceed three hours per day between 7 a.m. and 7p.m. on such work as will not interfere with hours of day school.

d. Stabilization of Employment—Engineers shall administer their functions so as to provide the maximum practicable continuity of employment to those in their employ.

Article IV—Regulations Governing Relations Between Engineers and Their Clients or Employers

Where the engineer's services involve a fee of $1,000 or more, his relations with, and responsibilities to his client shall be evidenced by duly executed written agreements. Neither of the contracting parties shall assume any of the duties or responsibilities hereinafter defined as obligatory on the other nor may one of the contracting parties receive any part of the pay or profit hereinafter defined as belonging to the other.

An engineer shall at all times abide by the "Code of Ethics" adopted by the American Society of Civil Engineers September 2, 1914, and by the "Code of Practice of the American Society of Civil Engineers," adopted January 18, 1927, which are apended hereto, and these codes of ethics and practice are hereby made a part of this Code of Fair Competition, and subject to the same conditions of enforcement as if herein written in full. Violation of this "Code of Fair Competition for Professional Engineers" shall justify cancellation of relations by a client, dismissal by an employer or discipline by the National Control Committee and/or prosecution at law under the provision of the National Industrial Recovery Act.

An engineer shall not:

a. Acquire, own or otherwise benefit by the purchase, sale or ownership in any real estate or business interest which may be affected by any work for which he shares responsibility, except with full knowledge and consent of his employer.

b. Own stock in, or have other interest in, or in any way benefit from the business of a contractor employed on any work for which the engineer shares responsibility, except with the full knowledge and consent of his employer.

c. Accept any pay or commission, except as clearly stipulated in his contract or terms of employment, for the use of any materials, patented device, appliance, tool or method employed on the work.

d. Accept any fee or gratuity for engineering or other services rendered to any contractor or sub-contractor engaged on the work for which the engineer is engaged as the client's or employer's representative, or accept compensation, financial or otherwise for services in connection with such project, from any person other than his client or employer, except with the full knowledge and consent of his employer. Nothing herein shall be construed to operate against the prevailing and good practice by contractors and sub-contractors of engaging engineers, other than the engineer of record for the work, to render engineering services to them in connection with their engagement as contractors or sub-contractors.

e. Specify, direct, invite or accept engineering designs, studies or sketches from a contractor, sub-contractor or supplier of materials, interested in the work or in bidding on any element of the work, where such are services herein defined, or defined in his agreement with his client or employer, as being the responsibility and duty of the engineer. This does not debar the customary shop and working drawings, made by contractors for the work to be executed by them, nor the use of technical information issued by producers for the information of engineers.

f. Give any rebate, discount, bonus, fee, or commission in order to reduce his fee, or to influence or procure employment.

Article V—Unfair Practices

To maintain fair minimum salaries and wages for engineers and engineering assistants the National Control Committee through its subordinate regional, state or local committees, shall, within four months after the effective date of this Code, establish schedules of fair minimum rates for all types of engineering services functional to the Construction Industry. In arriving at these schedules the National Control Committee shall endeavor to prescribe rates equivalent to the average rates which obtained in each region at the beginning of the year 1929.

To assure fair competition and prevent rendering of services below cost of production, plus overhead, insurance and incidental expenses, plus a reasonable profit, and to insure fair basis for the determination of cost-plus fees terms of employment, the National Control Committee shall develop, with the cooperation of its subordinate regional, state and local sub-committees, standards of cost accounting with uniform methods of determining overhead, inclusive of principal's time and other chargeable items.

To maintain fair minimum rates of charge for the various branches of engineering practice functional to the construction industry and to avoid price cutting among engineers in private practice, but without any attempt at price-fixing, the National Control Committee through its subordinate regional, state or local committees shall establish schedules of fair minimum charges, where practicable, for all types of engineering services functional to the Construction Industry. The recognition of such minimum schedules shall in no way operate against any engineer whose training, experience, reputation or specialized practice, justifies a higher schedule of charges.

In the operation of this Code, before the establishment of engineering fees as above described, no engineer shall charge for his services an amount less than his costs, including overhead and incidental expenses.

In order to eliminate unethical and unfair competitive practices that violate sound public policy and proper profession procedure:

(a) An engineer shall not enter into fee, salary or wage competitive bidding with other engineers for a professional engagement.

(b) An engineer shall not offer or provide free of contingent engineering services or free cost estimates, in competition with any other engineer whose services have been retained for the work.

(c) An engineer employed in a salaried position on full time basis shall not solicit outside employment in competition with other engineers, nor authorize the use of his name for solicitation of outside work. He may serve in a consulting or advisory capacity with the consent of his employer.

(d) No person shall perform or undertake to furnish or be responsible for engineering services unless he is qualified by education, experience and organization and as herein defined.

The engineer should recognize and accept professional responsibility for the correctness, accuracy and safety of his design and for the completeness of information given to the contractor. He should not require the contractor to be responsible for any work not called for and not indicated by his plans and specifications, and should not require that the work be acceptable to the engineer except in conformity with stipulated requirements of the plans and specifications. Where necessary, the engineer should obtain adequate and sufficient subsoil data and subsoil tests and he should supply such information to the bidders. He should stipulate fair and equitable liability and damage insurance, and bonus, damage and indemnity provisions, where any or all of same are required.

The engineer shall observe the rules of fairness in making known all requirements for the work for which he is responsible.

Arbitration according to the procedure of the American Arbitration Association shall be accepted as the approvad method for adjudication of disputes, after decision by the engineer, and precedent to action at law.

Contractors and others furnishing materials shall not include engineering designs or engineering services with the furnishing of materials except as hereinbefore provided in Article IV, e, and then only when making a separate and distinct charge for the same to be paid by the owner, said charge to be not less than the usual or prescribed professional charge made by engineers for such engineering designs or other engineering services.

The engineer shall definitely establish in his design and specifications, the amounts of tolerance which will be permissible, and shall include definite provisions for additional installations, replacements, etc., if such tolerances are exceeded.

The engineer shall state clearly the time requirements of the various elements of the work or shall require the contractor to state them at the time of bidding.

The engineer shall not submit his design drawings and specifications for contractors bid until he has developed adequate preliminary information and essential pertinent data. He shall provide the contractor with opportunity to satisfy himself as to the adequacy of the engineering information given and the practicability of the type and method of installation shown on the engineers design and covered in his specifications. Adequate information should be issued to all bidders alike and the engineer should require the successful contractor to recognize and accept his full responsibility for the successful and safe prosecution and completion of the work in accordance with the contract documents. The engineer shall permit the contractor to submit, for the engineer's consideration, plans and details showing the contractor's proposed methods of installation, plant layout, and erection of temporary structures, and require that the engineer's consent be received by the contractor before such methods are adopted. The engineer shall require that if there be any existing hazards for which the contractor is unwilling to accept responsibility, such exceptions be evidenced by the contractor prior to the signing of his contract.

The engineer, where so engaged, shall provide adequate and sufficient field supervision and inspection of the work and shall at all times be ready to accept or reject any part of the work as the installation proceeds.

Article VI—Regulations Governing the Engineer

Recognizing the inherent differences in customs and procedures between the various branches of engineering involved in the general field of construction and that in any branch of engineering, customs and procedures differ depending upon the magnitude and complexity of a project and upon the experience and record of accomplishments of different engineers, and that some engineers are especially expert in highly specialized fields of engineering, this Article is necessarily a generalized statement of the duties to be undertaken and performed by the engineer. It is good practice that there shall be engaged engineers skilled in the specialized fields of engineering. This article does not cover detailed items of service incident to highly specialized fields of engineering, or to preliminary investigations or reports as to the feasibility of projects, but is a statement of minimum services to be performed by the engineer, the responsibilities for which may not be delegated by him except that this shall not prevent the employment of special services for surveys, subsoil investigations, laboratory analyses and tests, and similar services under the direction of the engineer as a separate account.

A. Investigations

(a) Investigations, surveys, and collection of all necessary or essential data, assuring the accuracy and completeness of such data in so far as it controls the type of design, method of installation, stability of structure, or completeness or fairness of the bids on the finished work.

(b) Studies, preliminary design and, where necessary or desirable, comparative cost estimates of same, in order to determine the ultimate design which will for safety and permanence best satisfy the requirements for feasibility of construction and economy.

(c) Where necessary or desirable a report setting forth recommendations with such supporting statements, data and such drawings as are necessary for a clear understanding of the recommendations and the reasons therefor.

B. Designs, Contract Drawings and Specifications

(a) Complete design of the work including all necessary design and contract drawings showing design details for

the complete construction and or installation of the work covered.

(b) Complete specifications describing all elements of the work covered, particularly such elements as are not clearly or sufficiently detailed in the drawings, such specifications to outline methods called for as being acceptable to the engineer.

(c) Invitation to bidders containing information sufficient to enable an experienced contractor to make a complete and fair bid covering the work.

C. Advisory Supervision of Construction

(a) General supervision and coordination of the installation of the work.

(b) Estimates of the value of work installed for partial and final payments to contractors when necessary or advisable

(c) Survey, record drawings, and certification as to the completion of contractor's work.

D. Detailed Resident Supervision of Construction

(a) Resident supervision and detailed inspection of the work.

(b) Field and or shop inspection and tests of materials and equipment.

To effectuate the declared policy of the National Industrial Recovery Act, "to eliminate unfair competitive practices, and to rehabilitate industry," the engineer's procedure for the selection of a contractor by competitive bidding shall be governed by the following basic principles.

Fair competition shall include consideration of capability, experience, honesty, financial stability, price and time.

The form of contract affects bidding; the following forms of contract procedure, whether for entire projects or for any segregated compound part thereof, are recognized as proper; (1) lump sum; (2) guaranteed outside price; (3) cost of work plus a fee; (4) unit prices.

The engineer should limit the bidding to contractors who have properly prequalified as to reputation, experience and responsibility. He shall not recommend the award of the work unless the contractor can demonstrate to the awarding authorities that he is competent, technically and financially. A contract bond when required, shall not be held to reinforce or enhance a bidder's credit, stability or capacity, but shall be considered only as a protection against business accidents. Any bid may be accepted at the price originally submitted, except as otherwise covered by law.

The engineer shall not sanction or permit the payment of any fees, bonuses, or other forms of payment by any bidder for services rendered in connection with securing an award, nor the disclosure by any contractor of any bid to a competitor or otherwise to induce secondary bidding, nor to engage in the unfair practice known as "bid peddling."

The engineer shall require that every rebate, refund, allowance, discount, commission, or service privilege in whatever form, be extended by a vendor to every purchaser under like terms and conditions.

To secure fair competitions as defined hereinbefore, no product or service shall be obtained below cost.

When practicable, bids shall be accepted within 20 days from bid date and quotations thereon by suppliers of material shall be held subject to acceptance within 30 days of such bid date.

All sales by suppliers of material to a contractor except for cash shall be stopped after 60 days credit, unless through no fault of the contractor, payments to him have not been made in accordance with his contract.

ARTICLE VII—ADMINISTRATION PROVIDED FOR THE CODE

Amendments—Amendments or revisions to this Code may be proposed by any truly representative professional engineering organization providing for membership as hereinbefore described, acting through the National Control Committee hereinafter defined.

National Control Committee—To effectuate the purposes of this Code and provide for administration control within the engineering profession in so far as it is a function of the construction industry, a National Control Committee shall be established composed of four engineers appointed by the American Society of Civil Engineers, and one engineer appointed by each of the national professional engineering organizations providing constitutional provisions for membership as hereinbefore defined in Article II, and which are indicated in the first paragraph of the Preamble of this Code as having subscribed to this Code, and two engineers at large to be selected by the before mentioned members to represent the engineers who have no national professional engineering society affiliation.

This control committee shall have full authority to make all needful rules and regulations for the administration and enforcement of the provisions of this Code. This control committee shall have full authority to establish such subcommittees and such subordinate local, state and regional committees and to prescribe such duties, rules and regulations as are deemed necessary to carry out the purpose of this Code and of the National Industrial Recovery Act.

In the establishment of each such state committee (or where there is no state committee, in each regional committee), there shall be one representative for each state from the recognized existing or hereafter created state professional society, in which membership is contingent upon legal admission to the practice of engineering within that state. Such representative shall be designated by such recognized state society.

The National Control Committee shall coordinate its acts with the administrative agency established under the Code of Fair Competition for the Construction Industry.

Administration Expense—All engineers in so far as their practice is a function of the construction industry and as defined in this Code shall bear their proportionate share of the expense of administration of this Code under such rules and regulations as may be approved by the President under Section 10 (a) of Title I of the National Industrial Recovery Act.

Effective Date—This Code shall be effective when approved by the President of the United States and shall be applicable only to professional engineering services functional to the Construction Industry undertaken after such approval date.

PLASTERER'S NEW CODE

A plan to give employment to every plasterer in California is reported to have been incorporated in a code drafted by the California State Conference of Master Plasterers at San Francisco, to be submitted under the NRA. Under its provisions, the name of every plasterer would be listed, and contractors would be required to hire them in order. After the first had completed a job, his name would be placed at the bottom of the list. In that manner of rotating, it was felt all plasterers would have equal opportunities to obtain employment. Wages proposed included $1.25 per hour for plasterers; $1 to $1.25 for lathers, $1 for tenders, $2 for modelers, and 33½ cents for laborers. A five-day week would be limited to six-hour working days.

PROVISIONAL CERTIFICATE

State Board of Architectural Examiners, Southern District, granted a provisional certificate to Edmund C. Abrams, 2728 W. 54th Street, Los Angeles, on September 26, authorizing him to practice architecture in California.

« « « « With the Architects » » » »

UNCLE SAM AIDS LOCAL HOUSING

The Federal government has approved an apartment housing scheme for San Francisco, amounting to $3,230,000. It is proposed to develop the old Odd Fellows Cemetery, bounded by Turk, Parker, Geary Streets and Arguello Boulevard with a group of eleven four-story, fireproof residence-apartments, with landscape and park features, from plans by Miller & Pfluger, architects, 580 Market Street, San Francisco. The improvements will be made under the name of the Roosevelt Terrace Housing Development, Inc., with Henry E. Monroe, Athol McBean, Alfred B. Swinnerton, E. H. Heller and William H. McCarthy as directors. There will be a total of 886 apartments of four-rooms each and it is planned to rent these apartments for $11.00 a room. It is understood that funds will be available from the Federal government as soon as plans are completed.

EARTHQUAKE COMMITTEE TO REPORT

Members of the State Association of California Architects are anticipating a report on the new lateral force laws recently enacted by the State legislature. This report is now in the making by a special committee appointed by President Robert H. Orr to cooperate with the State Division of Architecture. The committee is composed of Dodge A. Reidy of San Francisco; Will Corlett, Oakland; John F. Murphy, Santa Barbara; Wm. Richards, Los Angeles and Walter T. Steilberg, Berkeley.

ITALIAN STYLE RESIDENCE

Harold G. Stoner, architect, has completed drawings for an Italian style residence to be built on the north side of Belgrave, east of Stanyan Street, San Francisco, for Miss M. Malone. Mr. Stoner has also completed drawings for a dwelling in Baywood for A. L. Scott.

MARINA BOULEVARD HOME

A $15,000 residence has been designed by Clarence A. Tantau for Dr. Nicholas Juardo and Dr. Catherine Barbick, 209 Post Street, San Francisco. The location is the Marina Boulevard, near Webster Street, San Francisco.

Norman W. Shaw and John B. McCool announce the opening of offices for the practice of architecture at Nine Geary Street, San Francisco.

Charles T. Phillips, mechanical engineer, who is well known to the building industry in San Francisco and the Bay region, is candidate for Supervisor at the election to be held November 7th. Mr. Phillips, while no politician, has some good ideas on how a government should be run.

Louis L. Dorr has moved from 501 Signal Oil Building, Los Angeles, to room 1007 in the same building.

A. R. Walker and P. A. Eisen have moved from the Signal Oil Building to suite 708 Pacific Commerce Building, 437 S. Hill Street, Los Angeles.

Charles D. Wailes, Jr., for eight years chief building inspector of Long Beach, has tendered his resignation to take effect November 1. Mr. Wailes has been one of the leaders in the activities of the Pacific Coast Building Officials Conference and last year was president of that organization.

H. L. Gogerty, architect, has moved his office from the Oil Exposition Building, Compton, to 221 E. Compton Boulevard, Compton.

Ellis F. Lawrence of the firm Lawrence-Holfrod-Allyn & Bean, Portland, is out of the hospital, having recovered from a minor operation.

J. W. De Young, Portland, recently returned from a business trip to British Columbia.

Silas E. Nelsen, 405 South Sheridan Avenue, Tacoma, is making a preliminary study for the Tacoma Metropolitan Park Board on the proposed yacht harbor at Point Defiance Park. The project consists of a breakwater, mooring floats and boat house with livery. The estimated cost is $150,000.

LOS ALTOS DWELLING

Chester H. Treichel, architect of Oakland, has prepared plans for a two story Spanish style dwelling to be built at Los Altos, San Mateo County, for C. Kawoalski and estimated to cost $12,000.

SAN FRANCISCO BREWERY

Warren E. Murray, structural engineer, 908 Hayes Street, San Francisco, is completing working drawings for substantial additions to the Milwaukee Brewing Company's plant at 10th and Bryant Streets, San Francisco, estimated to cost $250,000. There will be a six story steel frame, concrete and brick stock building and a four-story reinforced concrete bottling house, in addition to new equipment.

OAKLAND FACTORY BUILDINGS

Working drawings are being completed in the office of Bliss and Fairweather, architects, Balboa Building, San Francisco, for a group of factory buildings at Elmhurst, Alameda County, for the Standard Brands of California, Inc. This $500,000 project involves about sixteen different structures, from one to four stories, with steel frame and brick walls. L. H. Nishkian is the engineer.

OAKLAND BREWERY

Plans have been completed by O'Brien & Peugh, 333 Montgomery Street, San Francisco, for a new brewing plant in Oakland for the Samarkand Brewing Company, 893 Folsom Street, San Francisco. Construction will be of reinforced concrete and an estimate of the cost is $250,000.

LOFT BUILDING ALTERATIONS

Plans by Frederick H. Whitton, 369 Pine Street, San Francisco, call for extensive alterations to the six story Class B store and loft building at Battery and Pine Streets, San Francisco, for the Michael Donohoe Estate. A portion of the building has been leased to the Pacific Greyhound Line, and will be utilized as administrative offices of the company.

VETERANS' MEMORIAL BUILDING

Alameda County Supervisors have approved plans for a one-story reinforced concrete Veterans' Memorial Building in San Leandro, estimated to cost $80,000. Henry H. Meyers, of San Francisco, is the architect.

LODI WINERY

Plans have been completed by H. C. Baumann, architect, 251 Kearny Street, San Francisco, for a $150,000 winery in Lodi, San Joaquin County, California, for the Roma Wine Company.

GRASS VALLEY SCHOOL

Frederick H. Reimers, architect, 233 Post Street, San Francisco, has completed plans for a one story Class C reinforced concrete shop building, to cost $10,000, for the Grass Valley High School District.

PENTHOUSE BUNGALOW

O'Connor-Moffatt & Company will build a model home in the Normandy style of architecture on the roof of its department store building, Stockton and O'Farrell Streets, San Francisco. Plans for the dwelling, which will be used as a setting for afternoon teas, etc., have been completed by O. A. Deichmann, architect.

SOUTHERN CALIFORNIA CHAPTER

Colonel E. A. Evans, assistant engineer of the State Advisory Board of the Federal Public Works Administration, was the speaker at the regular monthly meeting of the Southern California Chapter, The American Institute of Architects, at the University Club in Los Angeles, September 12.

Procedure in filing requests for aid seems to be misunderstood by some applicants, according to Colonel Evans. Applications go direct to the State Advisory Board and are not handled through the Regional Advisor, nor chambers of commerce or other similar bodies. After considering the requests, the board sends them on to Secretary of the Interior Ickes, national administrator, at Washington where the final decision is made. Building projects need be accompanied by nothing more than sketch plans and brief descriptive specifications. Working drawings are not necessary.

The government is not interested in any project unless it is socially necessary and financially sound, Colonel Evans said. The question of necessity is decided by determining whether or not an honest endeavor is being made to help the NRA program, the intent of which is to give preference to those projects that will put the most men at work in the field in a short space of time. The condition of the applicant's budget, of course, is carefully considered by the financial specialists on the board.

Colonel Evans pointed out the two methods of financing to which the applicant has recourse: The 70 per cent plan secured by bonds, which may be sold to the government or private interests, with the grant of up to 30 per cent; and the lease arrangement whereby the government acquires title to the property and is repaid over a period of years, the title reverting back when the loan is paid out. Applications may be submitted before a bond election is held providing the project is what is termed worthy.

Loans may be made to private corporations where the funds are to be used for improvements of a public or semi-public nature, Col. Evans stated, but the restrictions are extremely rigid. Housing and slum clearance projects are handled directly from Washington, no information being available locally on this class of work. Most of the applications in the Los Angeles office are for

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.

Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—

Common, $30 to $35 per 1000 laid, (according to class of work).
Face, $70 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $14.00 plus cartage.
Face, f.o.b. cars, $30.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 68.00 per M
4x12x12 in.	76.50 per M
6x12x12 in.	105.00 per M
8x12x12 in.	174.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$76.50
6x12x5½	59.50

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.

Mosaic Floors—80c per sq. ft.

Dnraflex Floor—23c to 30c sq. ft.

Rubber Tile—50c per sq. ft.

Terazzo Floors—45c to 60c per sq. ft.

Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	1.10 cu yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND

Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b. Job, S. F.) $2.45 per bbl.
Cement (f.o.b. Job, Oak.) $2.45 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 22.00 per M.
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—

Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—

Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—

Sand, 40 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—

Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—

Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 70c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per square foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—

Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

Common, $28.00 per M (average).
Common O.P. select, average, $34.00 per M.

1x6 No. 3—Form Lumber	$18.00 per M
1x4 No. 1 flooring VG	50.00 per M
1x4 No. 2 flooring	44.00 per M
1x4 No. 3 flooring	32.50 per M
1x6 No. 2 flooring	46.00 per M
1¼x4 and 6 No. 2 flooring	55.00 per M

Slash grain—

1x4 No. 2 flooring	$44.00 per M
1x4 No. 3 flooring	38.00 per M
No. 1 common run T. & G.	36.00 per M
Lath	5.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ .90 per bdl.e
Redwood, No. 2	.70 per bdle.
Red Cedar	.85 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.
1 1-16x2¼" T & G Maple	132.00 M ft.
⅞x3½ sq. edge Maple	140.00 M ft.

	13-16x2¼" T&G	⅝x2" T&G	6-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	

Laying & Finishing 13c ft. 11 ft. 10 ft.
Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.00
2 ply per 1000 ft .roll	4.25
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	10.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.25 base.
Sash weights, $45 per ton.

Millwork—

O. P. $90.00 per 1000. R. W., $96.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.00 and up. each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $6.25 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.00 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $5.00 each.
Dining room cases, $6.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $10.00 per M.
For smaller work, average, $25 to $32 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work ..... 40c per yard
Cold Water Painting ..... 10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.40
2 coats, lime mortar hard finish, wood lath	.50
2 coats, hard wall plaster, wood lath	.50
3 coats, metal lath and plaster	.90
Keene cement on metal lath	1.10
Ceilings with ¾ hot roll channels metal lath	.65
Ceilings with ¾ hot roll channels metal lath plastered	1.30
Shingle partition ¾ channel lath 1 side	.60
Single partition ¾ channel lath 2 sides 2 inches thick	2.00
4-inch double partition ¾ channel lath 2 sides	1.20
4-inch double partition ¾ channel lath 2 sides plastered	2.25

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.60
3 coats Medusa finish No. 18 gauge wire mesh	2.90

Wood lath, $4.00 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $16.40 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $43.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $55.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $5.50 per square for 30 squares or over.
Less than 30 squares, $5.75 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$90 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $87.00.

Steel Reinforcing—
$80.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on al' work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestos Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caissons Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20

*Established by Special Board

CRAFT	Journeyman Mechanics
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00

CRAFT	Journeyman Mechanics
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 6 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admiasion Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

building projects and range all the way from $15,000 to $35,000,000 in cost.

Col. Evans said there was a noticeable lack of "red tape" in administering the act, regardless of the fact that a great many people thought otherwise.

Gordon B. Kaufmann, president of the Chapter, announced that the code for architects under the National Recovery Act had been finally passed upon by the Institute committee.

ARCHITECTS ELECT OFFICERS

Selecting its major objective as "cooperation with the building industry in putting NRA on a practical working basis," the Northern section of the State Association of California Architects banqueted at the Clift Hotel, San Francisco, October 30th. The meeting took the place of the annual convention of the State Association, which was abandoned this year for economic reasons.

It was the sense of the meeting that there is urgent need for the design of Federal buildings by local architects, familiar with the materials and requirements of a neighborhood. The necessity for enforcement of recently passed earthquake building laws, was also discussed.

Officers elected were: Chester H. Miller, president; Raymond W. Jeans, vice-president; Dodge A. Riedy, treasurer; Ellsworth Johnson, secretary. Besides these, members of the new board of directors are: C. J. Ryland, A. Appleton, Birge Clark, and Albert J. Evers.

PRODUCER'S COUNCIL MEETING

The first fall luncheon of the series being presented by The Producers' Council Club of Northern California was held at the San Francisco Commercial Club, October 9th, at 12:15. The principal speaker was J. Frank Park, engineer for the Carrier Engineering Corporation of California, whose subject was "Manufacturing Weather to Make Every Day a Good Day". Mr. Park's address was accompanied by several visomatic records.

The Producers' Council, affiliated with the American Institute of Architects, is a national organization in which manufacturers of diverse lines of building materials and equipment and associations of such manufacturers have joined forces to promote their common interests and to uphold certain desirable standards essential to the welfare and progress of the industry.

All responsible American manufacturers of quality building products who are in sympathy with the aims and otherwise meet the membership requirements, are eligible for membership in the Producers' Council.

G. R. Kingsland is Governor of the San Francisco club.

WORLD'S LONGEST ESCALATOR

Saving a climb of 117 steps, the world's longest escalator has been installed in the new Manhattan Queens Independent Subway System, New York City, which was recently formally opened in a ceremony attended by public transportation officials. The escalator, built by the Otis Elevator Company, is 112 feet long and can carry 4,000 people an hour from the platform 70 feet underground to street level. The new subway stations are built so that additional escalators may be added as needed.

ESCALATOR IN MANHATTAN QUEENS INDEPENDENT SUBWAY STATION, NEW YORK

ARCHITECT INJURED IN COLLISION

Noble Newsom, architect, and associated with Archie C. Newsom, with offices in the Russ Building, San Francisco, was injured in an automobile accident on the state highway near Fairfield, September 20. The architect was returning from a trip to the Feather river district where he had gone to inspect a site for a swimming pool for the Piedmont Boy Scouts. With Newsom was Edward Davy and Ernest Sweetland, the latter owner of the beautiful Piedmont home designed by Frederick H. Reimers and illustrated in THE ARCHITECT AND ENGINEER about two years ago. Sweetland received a fractured leg and Newsom a fractured skull and dislocated knee cap.

ANENT A CODE FOR ARCHITECTS

By Irving K. Pond, F.A.I.A.

The first reaction of the contemplative man to this matter of hastily improvised and self or otherwise imposed codes is one of questioning—what is it all about? Who is to be benefited and how? If the end be altruistic, then why are the means established and conditioned by so insensate and mechanical a contrivance as a governmental bureau; as government itself?

As the Government failed to make men virtuous or temperate by the passage of the 18th Amendment, will it by the enactment of codes make men virtuous or fair in their dealings one with another? This particular contemplative man, having through most of a long professional life interested himself in the establishment of codes of professional practice and in methods of fair dealing between man and man, as between one architect and another, between architect and client, between architect and builder, and noting the slow but certain progress made, wonders if the process can be speeded up or the cause advanced by industrial legislation. Until moral sense is developed in men, coercion must be employed. But how?

As to architecture, the only means would appear to be through a system of Federal licensing or registration, to use the genteel term. An architect who failed in his ethical obligations would have his license revoked. Under present conditions it would seem that appeal to the Interstate Commerce law would be the only way of disciplining the recalcitrant and then only should he operate in more than one state. There would be no other means than already exist to deal with local violators of the architectural code—revocation of state license, expulsion from professional societies, etc.

The code proposed by the officers of the American Institute of Architects—acting, in this present emergency, for the profession generally — is, in most part, that of the Institute. It would be very nice, very nice indeed, if all architects would or could be made to live up to it! It would be a great relief to those who for conscience sake have continuously lived up to it in the face of unfair competition and unfair dealings. But the only means of relief would seem to be through Federal registration—and a corps of shotgun sleuths.

But just what, other than a gesture of patriotism and of loyalty to the President, was the special need for architects to present a code at present? The profession of architecture, along with law and medicine, is exempt under the N.R.A. And why, especially, is it desirable at this time to suggest the possibility of draftmen's unions for the control of office practice?

Draftsmen do not want it, and never have wanted it. The scheme serves as an entering wedge for a new racket to be worked by outsiders for personal, financial, and other benefit. The spirit of the profession has always run counter to a hampering control of the creative mind. Indeed, just what is the function of the labor union, even in the trades and industries, when the Government prescribes and enforces, as under these codes, minimum wages, maximum hours, sanitary shop and labor conditions? Is not an altruistically paternal government a sufficiently powerful labor organization in itself!

However, codes are desirable (even when governmentally enforced) if they will eliminate sweatshop conditions, overstrain and unsanitary surroundings. Any means for remedying these evils are to be welcomed with gratitude by all for they affect the moral status of the community. But these conditions are unknown in architectural practice If an architectural code were necessary, the Committee did well to follow closely that, or those, already promulgated by the American Institute of Architects. It did not do so well in introducing extraneous matter. One important provision was overlooked; that which would provide for governmental guarantee of prompt payment by the client of all fees properly due the architect!

The prime motive for these codes is to relieve unemployment—to put men and then more men to work and to provide workers with a living wage. This motive is not only prime, it is most worthy and all wish for its success. But if prices are to soar, as they must, who is to profit? No one very much, and certainly not the professional man, not the man on salary, for salaries are being cut more in proportion than wages are being raised. Codes will not bring back salaries nor induce men to undertake research and invention.

The depression, which the codes are intended to relieve, taught many a man one wholesome lesson—that the finer things of life do not depend upon great wealth, in fact, that one can still get along—and even happily—on a very depleted income. Most of us have had to and it is lucky we still can be happy. The depression, as all this code activity would seem to indicate, did well in bringing to general attention the desirability, even necessity, of formulating in men's minds a conception of the fundamental ethical relationship between men which must exist and must be maintained if the world is to move onward in the path of industrial and social peace and plenty—*Monthly Bulletin*, Illinois Society of Architects.

ROOFS

Considering a comparatively small house such as most of us are privileged to enjoy, the roof usually must be strictly a utilitarian thing.

This is unfortunate, for beauty and real usefulness do not always run hand in hand so far as roofs are concerned.

There is a third element, pleasure, which American roofs seem to have neglected to a very great extent.

In the immortal story, Ben Hur, the accidental dislodging of something from the parapet around the roof garden upon a passing parade had far reaching consequence. In the crowded and warm cities of Ben Hur's day the roofs were the drawing rooms. I judge that when people no longer were compelled to crowd themselves within city walls for protection against raiders, they forgot about roof drawing rooms and gardens and only very recently have they remembered the ancient practice. This remembrance is exemplified in the pent houses so popular during the opulent part of the 1920 decade.

I never was inside of one of these pent house dwellings but I have seen moving pictures which were alleged to have been made in such glamorous places, and I have seen from airplanes the bungalows and mansions among gardens which have been placed atop skyscraping city buildings. I'd like to have a pent house, but if I were to design one I'd have an accessible flat roof on it.

I know one delightful pent house some forty-five stories above the ground, which by inexcusable ineptitude on the part of the architects, is unusable because of odors. They arranged two enormous restaurants in the basement of this mammoth building. They carried the boiler flue outlet well up above the pent house but took a chance on the ventilation outlets. The heat and gas and effluvia from the big kitchens which serve the restaurants are discharged through windows which look out a few feet below the pent house level. One hour of that gas poisoning will make such an impression on the visitor as never can be forgotten or forgiven. The big 17 foot main sewer at the 39th Street sewage treating works has better air and is a healthier living place than is this particular Chicago pent house.

Architects should be careful to insist that their ventilating engineers carry all vent discharge ducts above the highest occupancy zones, and should insist that the outlets look *up* and not out. There are very good reasons for emphasis in this matter.

The steep sloping roofs of the pine-rafter and cedar-shingle days, often occupying more space up and down above the eaves than that used by the structure below the eaves, were excellent for shedding water, but would not be very agreeable for a rocking chair or for supporting a card table. Apparently if we are to assist in the revival of ancient customs concerning utilization of roofs we must somehow achieve a fairly level surface for the roof. If the roof lines of conventional houses, however, shall be flattened out they seem to assume a mongolian sort of vacuity and appear to have negligible intellect. They are lowbrow houses.

A side hill type of furniture could be used on the flattish roof, of course. Such furniture would have to be built after the specifications of the famous side hill bears, with the legs on the down hill side always longer than those on the uphill side. One captured such bears by luring them to turn around and to attempt locomotion in the other direction.

Rather than live in a lowbrow house, however, enduring what one must endure in the way of what the neighbors will say about its looks, I think I'd give up the pleasure of the roof garden and would worry along with my rocking chair and my card table out in the back yard.

Did you ever notice the nice old self-respecting steep-sloping cedar shingle roof after some barbarian has bestowed a new parti-colored tile checkerboard on it? It is though our own dear old grandfather were compelled to wear a blue toupee.

Along in the Middle Ages they knew how to arrange their castles with flat roofs which served as fighting platforms during sieges, but which no doubt, in between sieges were useful for afternoon tea and for moonlight love-making. The battlements, barbicans, and parapets fended off the arrows and other neighborly missiles and also served admirably to keep the family from falling off and landing in the moat.

What we need now is an architect who can design a flat roofed house with a fence around it to keep the baby from falling off and which still shall have a sophisticated appearance. We would enjoy having a flat roof but we can't endure a roof with a look of Neanderthal brain tank development.

School houses throughout the country recently have run to flat roofs, with attics or brain quarters nearly eliminated. In some few cases roof playgrounds have been provided and all of these are much appreciated, since they are safe from street dangers and may have all the sunshine there is.

Eliminating the attic space in these school houses or in fact its elimination in any building has been proved to bring about unfortunate heat transmission consequences. An attic air space insulates the rooms below against the tremendous

heat due to sunshine. If the attic is eliminated the roof must be well insulated. There are other consequences, therefore, than mere lack of beauty when we have a lowbrow appearance for our houses.

In this connection it may be worth remembering that the white headed oldster traditionally has acquired wisdom and will maintain a cool head in emergencies, while the black or brown or red roofed youth tends to be hot headed and passionate.

A white coated roof, no matter whether flat or sloping, will reflect the bright sunshine and will keep the brain tank very much cooler than will the black or the brown or the red colored roof. This fact has been thoroughly established in laboratories and goes to show the wonderful provisions of all-seeing Providence in giving us white roofing when we get older and begin to use our brains instead of our muscles as we did in youth.

City apartments are beginning to have flat roofs. Perhaps that is why they are called flats. In some cases these roofs are being used intelligently, as any one may see who rides the alley L. There are babies and animals and women and men of all colors and conditions on the back roofs in summer, especially at night.

Speaking of animals, every architect would do well to provide a dog and goat roof on every house, even though this roof need not be strictly flat, nor very large. Dogs can adapt their architecture to a side roof with more success than can a rocking chair or a card table. I have a very close friend, a big sable collie, who supervises the entire neighborhood from the roof of the front porch and who thinks it safe to challenge all dogdom from that haven.

If the main roof must be kept intellectual by providing a steep slope, perhaps even the palace of the very rich could have a dog-balcony at some unobtrusive point.

In any event never shall my domicile be without a dog roof. The excitement which attends this collie's threat to jump the twenty feet to the ground, so as to attend to some passerby, never wanes. There is no fence or parapet to my dog roof and one would think he might sometime not apply his brakes quite early enough, but up to date, while there have been a few skids, the brakes always have proved effective.

I don't know as much about goats and goat roofs, as I do about dogs and dog roofs, but why not? Such an arrangment might dispose of the tin cans and vegetable waste and provide a certified milk supply.—*William C. Lewis with elaboration by Samuel R. Lewis, Consulting Mechanical Engineer.*

HEATING EXPOSITION

If predictions of the identity of America's next great industry are correct, there is one event in the offing that no one will want to miss. A great new industry which will rival the telephone, the electric light, the automobile, and radio, in its influence on American industry, commerce, and home life, has been predicted by many. Perhaps it will further reveal itself at Grand Central Palace, New York, during the first week of February 1934. In a way, the identity of this new industry will not be at once obvious to the public, but from now on they will hear it discussed so many places that they will quickly learn of its origin, will be on hand to witness its emergence to universal application.

It has to do with man's temperature and breathing, and is thus as old as time itself. But man now is at last master of his most vital environment and a new industry is born. Every home, apartment, office, store, theatre, and hospital is in the market. The immediate buyers will be the same people who bought the first automobiles, electric refrigerators, oil burners, and radios. It is so vast in its application as to be applicable to every closed area in which the life of inhabitants, or the permanence of materials, is important. The setting to illustrate what is regarded by engineers and economists as America's next great industry, will be Grand Central Palace, New York. The name of the event will be long, but easy to comprehend. The event is the Third International Heating and Ventilating Exposition. The time, February 5th to 9th, 1934. The industry, Air Conditioning, a term used to describe the operations by which, through the aid of science and engineering, man can continuously or automatically wash, cleanse, filter, heat, or cool the air in which he has to live. The factor of cleanliness is broad, but the further conditioning, or treatment, of the air includes the removal of bacteria, dust, and odors, and the control of its circulation. In summer, air conditioning will cool the air and reduce its moisture content. In winter it will heat the air and add moisture. It is not difficult to see that this total treatment, or "conditioning", as it is called, will result in better health and life for all who partake.

Within the next five or ten years it will be as obsolete to live in ordinary dust, heat, and high humidity in summer, as it is to live in homes without heaters in winter, or to read by a candle. In terms of another industry, the term "candle power" is a good reminder of how far the subject of illumination has come. In the old days, in the theatre, when you asked for stage lighting, there was only the brau-house answer, "Light or dark". The modern theatre can vary its lighting through 120 stages of intensity. Tomorrow, the Ameri-

can home will have similar flexibility in the temperature, humidity, and purity of its air. Perhaps luxurious but entirely possible will be your ability to turn the dial and give your living-room the airwhiff setting of the Adirondacks, the Catalina Island, or Cape Cod.

"Think of a home where draperies and furniture stay clean of dust, or antiques do not crack apart, and pianos stay in tune for years. Think of winters without colds, and summers relieved from the plague of hayfever". Thus, and otherwise, with great interest, comments Henry W. Doyle, in Forbes. Yet the subject is not only aesthetic: it is, according to economists, a new industry with a "billion dollar market".

The subject of air conditioning is a natural auxiliary of heating and ventilating. The forthcoming Exposition is under the auspices of the American Society of Heating and Ventilating Engineers, and will be held at the same time as the annual meeting of this group.

Exhibits at the Exposition will be in the following classifications: Combustion, steam heating, warm-air heating, central heating. Electric heating will also be featured. There will be a hydraulic section devoted to water feeders, heaters, pumps, traps, valves, piping, and fittings. A separate large grouping will be devoted to refrigeration as applied to air conditioning, another to thermal insulation. One of the most interesting divisions will be designated as "Control", and here will be shown the latest instruments of precision for indicating, controlling, or recording the temperature, pressure, volume, time, flow, draft, or any other function to be measured.

The audience will be as broad as the subject, and their classification can be estimated from the registration statistics of the two previous expositions, which were held at Philadelphia and Cleveland, respectively, in 1930 and 1932. In order of the number registered, it is as follows: Heating, ventilating, and air-conditioning contractors and dealers; plumbing contractors, home owners, public utility representatives, engineers, builders, metal and metal products representatives, architects, electrical specialists. In smaller groups practically every other business classification is represented, from aviation to welding.

GIVEN CERTIFICATES TO PRACTICE

At the September 12th meeting of the Northern California Section of the State Board of Architectural Examiners, the following candidates were granted Provisional Certificates:

C. A. Caulkins, Jr., Rosenberg Bldg., Santa Rosa.

John Fennacy, 1816 Lakeshore Blvd., Oakland.

Vincent Raney, 233 Post Street, San Francisco.

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Editor THE ARCHITECT AND ENGINEER:

It is more than probable that the most famous ship in the United States navy since we became a nation, the frigate Constitution, will remain as a twelve-months guest of San Francisco. I sponsored a resolution before the Board of Supervisors asking that this be done and this motion has been forwarded to President Roosevelt and Secretary of the Navy Swanson. Inasmuch as we are willing and anxious to provide certain maintenance costs for the year there is every reason for anticipating that our request will be granted. If it is it means one more intensely interesting historic relic to act as a magnet for people not only from all over the State of California but from states adjoining and even reaching far inland. It provides an opportunity to hundreds of thousands of people visiting San Francisco to see this remarkable old ship which otherwise would be denied them because they have not happened to be in one of the Coast cities where the boat has temporarily been docked. And it provides a lesson in history that will be taken advantage of by not only school children and men and women in colleges but by children of an older growth, which includes all of us, to whom the name Constitution has been only a name, associated vaguely with the earlier years of the Republic.

An idea of the appeal that this old frigate, commissioned one hundred and thirty-six years ago, makes when properly publicized may be gathered from the fact that from March 22 to April 12 of this year, practically only three weeks, the Constitution docked in San Francisco was visited by THREE HUNDRED AND TEN THOUSAND PEOPLE. And going ashore from that mighty old fighting craft of our forefathers, that number of people were more enlightened with that epic period in our national history than they had ever been before. No wonder the gratitude of every right-thinking San Franciscan, every person living in the bay regions, and even throughout the state should be extended to the Board of Supervisors and to the mayors of the Bay region who joined in this movement to extend a year's hospitality to the Constitution.

E. J. SPAULDING,
Lieut. Com. U. S. Naval Reserve.

HENRY C. TROST

Henry C. Trost, who designed the Carnegie free library building in Tucson and several buildings in Phoenix and Douglas, died recently at El Paso, Texas, to which place he moved from Tucson in 1904. He was 73 years of age. In El Paso Mr. Trost was associated with a brother in architectural practice under the firm name Trost & Trost.

SAFETY CONGRESS MEETS

What the leading industrial groups of the United States accomplished during the past year in the control of accidents. What are the most important present-day accident hazards. What individual companies in the different industries are doing to control these hazards and what the separate industries are doing cooperatively in national accident prevention, were some of the subjects which leading executives from many industrial organizations of the United States discussed at the sessions of the Twenty-Second Annual Safety Congress and Exposition held in Chicago from October 2 to 6. Delegates attended from all parts of the United States and from a number of foreign countries. There were over 100 program sessions, representing about 40 different organized groups in industrial safety, public safety, and home safety. There were more than 350 different speakers, including leading business executives and safety and efficiency experts in many different industrial and public safety fields.

The Congress included special program sessions planned and conducted by 23 different cooperative Industrial Sections of the National Safety Council. Each respective Section represents an entire industry, with elective officers and special committeemen, all of whom are serving voluntarily without pay.

Most of these cooperative sections of the National Safety Council have been in existence for ten to twenty years; during these periods they have been active in promoting the national safety progress of their respective industries. These sections are working units of the National Safety Council, a cooperative, non-profit making, national service organization.

Supplementing the special sessions for each industry, there was held ten general "Subject Sessions" for all Congress delegates. The speakers were experts in their respective fields. The "Subject Sessions," and the topics considered were as follows:

1. Accident Records: How to Collect and Tabulate Them; How to analyze and Use Them.

2. Hoisting Chains: The Causes of Chain Failure; Inspection of Hoisting Chains; Repairing, Annealing and Normalizing Hoisting Chains.

3. Safe Use of Chemicals in Industry: Safety in Chemical Laboratories; Safe Handling of Acids and Caustics (Small Quantities); Safe Handling of Acids (Large Quantities).

4. Handling Materials: Handling Materials by Hand; Conveyors—Their Safe Installation, Use and Maintenance; Industrial Truck and Tractor Accidents and Their Elimination.

5. Safety Organization and Program: Education; Mechanical Safeguards and Engineering Revision; Supervision.

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6. Safe Use of Electricity in Industry; Portable Electrical Equipment; Safety Switches—Their Application, Operation and Maintenance; The Use of Low Voltage in Hazardous Locations; The Physiological Effects of Electric Shock.

7. Falls of Persons: Ladder Accidents and Their Prevention; Safe Walkway Surfaces — Their Application and Maintenance; Stairs and Ramp Accidents and Their Prevention.

8. Dust Problem in Industry: The Mechanical Control of Dust; How to Determine the Dust Content of the Atmosphere in Dusty Industries (a laboratory demonstration).

9. Maintaining Interest in Safety: Safety Contests; Investigation of Accidents; Foreman's Training in Accident Prevention.

10. Fire Prevention: How to Have a Fire in Industry; Safe Storage and Use of Flammable liquids (Large Qantities); The Hazard of Defective Fuses and Extension Cords.

RUST PROOF CASEMENT WINDOW

A new duraluminum casement window fixture is announced by Dalmo Manufacturing Company and its subsidiary, Dalmo Sales Corporation, both of San Francisco, the new product being a development from years of research and experience, coupled with an understanding of needs expressed by owners, architects and builders.

The material Duraluminum resists corrosion. Outstanding among the many qualities of aluminum is its resistance to atmospheric corrosion. Defying the corrosive attacks of smoke and fume, paint protection is required only under special conditions.

The compounds of aluminum are colorless, thus eliminating the danger of streaking and staining adjacent surfaces.

When aluminum expands or contracts, it returns undistorted to its original dimensions. It will not warp or split.

Advantages of the new duraluminum casement window fixtures are ease of installation, low initial cost, artistic appearance, easy and smooth operation, elimination of adjusters and butts, saving on millwork, weatherproof and watertight design, adaptability to old casements, durable hardware, reversible sash for convenient cleaning, no interference with curtains, drapes or screens.

Dalmo fixtures may be used on transoms which swing in or out at the top or bottom. The sash is held in open or closed position by lock washer, and rigidly against wind pressure, absolutely preventing it from rattling or slamming in the wind. The sash can be placed in a position to direct refreshing breezes or deflect disagreeable winds without the loss of proper ventilation, permitting a maximum or minimum amount of ventilation.

The sash can be weather-stripped the same as

hinged casements and still permit the proper functioning of the fixtures.

The sash is guided by curved track of fixtures away from the inside stop, eliminating the beveling of the inner edge of sash. The angle end of sash plate gives a neat 1/16" clearance between jamb and sash stile at hinge side and allows proper fitting of sash in vertical plane.

Special sizes and extra long fixtures can be made to order. Special designs for steel sash and other uses will be submitted by the Dalmo engineering department.

Each set of fixtures, complete with screws, contains one right hand and one left hand fixture which will hang one sash. The sash can be made to swing outward from either the right or left hand side of the window frame, according to which way the fixtures are inverted, or placed on the top and bottom rails of the sash.

"We believe this product will revolutionize the casement window business," declared Mr. Moseley, President of The Dalmo Company, "due to the fact that duraluminum will resist corrosion and the fixture will last the life of the building."

LOS ANGELES UNION DEPOT

The Los Angeles $8,500,000 Union railroad station appears at last to be a reality. Approval of the Plaza site has been given by the railroads and city government. Fronting 1300 feet of Alameda Street, the terminal, including parking and train approaches in rear, will extend 1200 feet deep along Macy and Aliso Streets.

The structure will embody the latest developments in transportation facilities and, in addition to waiting rooms, ticket booths and all other essential features of a union terminal, will contain office space sufficient only for station administration. More than ten miles—54,000 feet, to be exact—of trackage will be used within the station and the immediate approach thereto. It is estimated that the building itself will be completed within eighteen months after the ground has been cleared and necessary street closings and grade-crossing eliminations have been accomplished.

Approval by the railroads, and acceptance by Los Angeles officials, of the so-called set-back station plan will place the main entrance and floor of the terminal on a level with Alameda Street. Passengers will go up one flight of stairs from the main level to the train platform, which will be twelve feet above Macy Street and sixteen feet above Alisa Street. Baggage and express will be taken into the station through subways running beneath the tracks. Provision has been made for the accommodation of 500 automobiles in the center of the park fronting the station.

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ACCEPT BUILDERS EXCHANGE CODE

The State Builders Exchange code filed under the California Recovery Act September 11 is to be the basic code for the industry.

At the outset Deputy Commissioner Michel ruled that the code would be considered apart from any of the national codes filed at Washington, holding that the state could take no notice of them until they had been finally approved by the President and made operative. He further indicated that the state codes would only be superseded by national codes where any provisions were in conflict. This is in line with the general interpretation of the state law.

Inasmuch as the Builders Exchange code will be the basic code for the industry the deputy commissioner also ruled that all reference to minimum wages and maximum hours would be excluded, these being left to determination in the separate codes of the different branches of the industry. Reference was allowed only to collective bargaining between employers and employees.

Consideration of the code was taken up section by section with the result summarized below:

(1) Accepted. Defines branches of industry affected.

(2) Deleted. Fixed minimum wages.

(3) Deleted. Fixed maximum hours.

(4) Accepted. Prohibits child labor.

(5) Deleted. Referred wage scales to boards of arbitration.

(6) To be redrafted. Creates administrative body.

(7) (a), (b) and (c) Accepted. Quoting collective bargaining provisions of state law.

(d) Deleted. Permitted open shop operation.

(e) Deleted. Dealt with hiring and promotion of craftsmen.

(8) Accepted. Includes office employes in benefits of code.

(9) (a) Deleted. Required architect or engineer on all projects costing more than $2500.

(d) Deleted. Required owner to specify type of contract.

(c) To be redrafted. Permitting owner to select any bidder from those submitting proposals.

(d) To be redrafted. Similar to (c) applying to sub-contracts.

(e), (f) and (g) To be redrafted. Provides protection of contractors from bid peddling.

(h Deleted. Prohibited unsolicited bids.

(i) Deleted. Required owners to give evidence of financial standing.

(j) To be redrafted. Establishing methods of making payments on contracts.

(10) Deleted. Required contractors to abide by local trade conditions.

(11) Accepted. Requiring contractors to figure a "reasonable" overhead and profit in their bids.

(12) Accepted. Requiring contractors to figure their own labor in bids.

(13) Deleted. Prohibited material men from selling to anyone outside the trade.

(14) Deleted. Established uniform prices for building materials.

(15) Accepted. Contractors to be governed by local building and sanitary codes.

(16) Accepted. Prohibiting defamation of competitors.

(17) Accepted. Prohibiting special inducements to obtain business.

(18) Accepted. Prohibiting special credit terms.

19) Deleted. Prohibited materialmen from quoting lump sum prices on orders.

(20) Accepted. Prohibiting labor contracts.

(21) Accepted. Including speculative builders

(22) Deleted. Covered by State License Law. under definition of general contractor.

(23), (24) and (25) Consideration deferred. Relating to proposed administration by State Builders' Exchange and local Exchanges.

Final action has not yet been taken on the state code submitted for the sand, rock and gravel industry. Strong opposition is reported to Articles I, II and V of the code. The attorney general is said to have given an opinion that no code can bind the state to the terms of the first two articles. Opponents of Article V, dealing with the use of portable plants, declare that it is discriminatory and in restraint of trade and contrary to the principles of the NRA.

According to S. F. Voorhees, architect chairman of the code committee of the Construction League of the U. S., it will not be possible to get the national codes set up and working before the end of the year.

TILE PLANT RESUMES OPERATION

Kraftile Company, of Niles, is again in production following the costly fire which put the plant out of commission on August 16. The company is working at top speed to meet requirements of contracts aggregating approximately $300,000. Principal customers of the concern include Sears, Roebuck and Company, the Federal Government and San Francisco City and County. Tile is being produced for use in the veterans' hospital at Fort Miley, the new San Francisco County jail and for various Sears, Roebuck and Company units throughout the country.

Damage aggregating several hundred thousand dollars was done by the fire, according to A. Clay Myers, vice-president and general manager of the company.

The Kraftile plant had been thoroughly modernized, at a cost of $150,000, shortly before the fire.

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BUILDING SHORTAGE NEARS

The products of construction rank along with food and clothing as necessities of life. Because of the more durable nature of construction products, houses, commercial buildings, industrial buildings and engineering projects, their replacement can be postponed, but eventually they must be made. For three years construction has been at low ebb and so has business in general with a resulting policy of "getting along" without replacements and in many instances without making needed repairs. Eliminations by fire and other causes of a destructive character further reduce the available number of buildings for residential, business and industrial purposes. A vacuum is being created. Replacements cannot be postponed indefinitely, for eventually they must be made. When all factors combine to force the relinquishment of the fear to build the proportions of the resultant activity may assume something akin to a boom period.

It is not necessary to cite statistics, for casual observers can readily estimate the growing dearth of space and certainly the increasing obsolescence of old buildings that owners are finding a burden and which are being torn down to decrease taxes. The drop in all classes of construction from 1928 to and including 1932 runs into millions of dollars, with population figures showing minor fluctuations and fire losses on the same almost even line. In addition to fire losses there is the constant depreciation of all buildings, bridges, streets and highways. As financial conditions permit, and they are dependent upon general prosperity, construction will improve. According to the Bureau of Labor statistics reporting on 297 cities aggregating 12,811,518 families as of 1930 with an increase in population of 2,435,735 as of January 1, 1933, there were 499,812 fewer

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dwelling units provided than the 757,112 increases in families. Even if there was no shortage of dwelling units in 1930 figures show a shortage of 499,812 on last January 1st. The total building operations in 14 leading cities rose from an index of 100 in 1921 to 229.2 in 1925 and declined each year thereafter until it reached the low of 26.3 in 1932. As the war against the depression enlists the cooperative effort of the entire nation with decreasing unemployment and increasing circulation of money, investors will again turn to construction loans as the safest.—*Stone.*

CONTRACTORS' LICENSE BUREAU NOTES

Increased building operations, spurred by the recovery program and the "buy now" campaign, continued during the past month to provide employment for tens of thousands of persons engaged in building crafts, and, at the same time, resulted in an increase in the work of the California Contractors' License Bureau.

Reemployment activity, insofar as the building and construction industry is concerned, is progressing at a highly satisfactory rate. Unquestionably, the number of idle workers who have found jobs on building operations far exceeds the number of persons shown to have been reemployed by statistical reports.

Reports received from field inspectors, who are in close touch with both the large and small building operators in every community, indicate that hundreds of small private commercial and residential projects are now under construction.

In addition, hundreds of remodeling, repairing, repainting, reroofing and general alteration jobs are under way in every district.

These projects, while of a lesser magnitude, obviously are providing employment for thousands of craftsmen in virtually every community or district, and are thus providing an important factor in

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the restoration of normal business conditions.

Increased building is apparent in virtually every city. Labor statistical reports, while serving an excellent purpose and indicating definite trends, cannot hope to present a complete report of reemployment, due to the excessive cost of compilation, and the fact that these lesser jobs, while greater in number, are scattered throughout the State.

* * *

New building operations have also increased the work of the Registrar. During the past month, the license of one contractor was revoked and the licenses of six other contractors were suspended for illegal practices.

Investigation of complaints also disclosed five contractors operating without licenses, and in violation of the state law. Immediate steps were taken to curb these illegal operations. These men will not be permitted to obtain licenses until they make restitution to the satisfaction of the complainant and the Registrar and also submit proof of integrity.

Two conflicting decisions affecting a minor section of the State Contractors' License Law were handed down recently by the Los Angeles Municipal courts. One decision, upholding the constitutionality of this section, was affirmed by the appellate division of the superior court. Another decision questions the validity of the same section.

Consequently, machinery has been set in motion to appeal the decision of Municipal Judge Joseph Call, and we feel confident that the appellate judges will re-affirm their former decision and reverse Judge Call.

In upholding the law in another case, the appellate court ruled that "failure of a contractor to comply with provisions of the act relating to the licensing and registration of contractors bar a recovery in an action on a contractors' lien."

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Both cases revolve around the same point of law. Judges Victor McLucas, Edward T. Bishop, and W. Turney Fox concurred in the decision affirming this provision of the act.

The State Registrar is continuing to lend his unlimited cooperation to both the state and national recovery administrations in the matter of the formulation of codes of fair practice for the various units of the building and construction business, the state's second largest industry.

Representatives of the department have attended several of the hearings conducted by the California Recovery Act Administration, signifying a willingness to do everything possible to assist in this movement insofar as it is legally possible.

A total of 40 complaints, accusing contractors of illegal and unethical practices, were filed with the Registrar, making a total of 73 cases which were under consideration in August. These cases involve $73,803 in construction operations and each case represented a small unit of some major construction work.

In 25 cases, contractors were found to be illegally operating without a state license, resulting in their being hailed into court. Of this number, 15 were convicted. Six cases were dismissed and four cases were still awaiting final court action at the close of the month.

The license of one contractor was unconditionally revoked following a formal hearing before the Registrar, while the licenses of seven other contractors were suspended as a result of their conviction at hearings before the Department.

In two cases, a settlement was effected at the conclusion of a hearing, while in eight other cases settlements were effected by arbitration by the field inspectors prior to, and without the necessity of a formal hearing.

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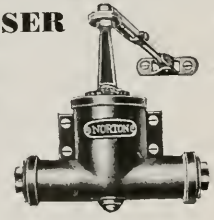

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A FEDERAL WARNING

The Treasury Department will look with much disfavor on those architects or engineers who retain legal counsel in Washington to aid them in securing professional contracts from the Department; in fact, it will be the disposition of the Department to eliminate such architects and engineers from consideration altogether. This announcement was recently made by Assistant Secretary of the Treasury Robert who has requested the American Institute of Architects and American Engineering Council to make the attitude of his office widely known.

Early in the summer the Treasury Department learned that certain Washington lawyers had been soliciting engineers, architects, and others, interested in obtaining Government business, representing that to retain such counsel would enhance the opportunities of the engineers and architects to obtain desirable contracts. This activity has been particularly prevalent in western states.

The Treasury Department has not made the names of the lawyers who engaged in this practice public, feeling that probably they did not realize (1) that their proposal was in itself a reflection on certain Government officials; (2) that representation of the nature lawyers would provide could not possibly have any bearing upon the selections made by the Treasury Department.

The Department desires to make its selections on the merits of each case alone. There is no disposition on the part of the Department to prosecute any of the parties concerned, but it does want it emphatically understood that such a practice will be outlawed.

SPEED PUMPS

The Chain Belt Company of Milwaukee, announces the publication of a new sixteen page catalog, Bulletin No. 240, which thoroughly covers their new line of Rex speed prime pumps.

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ARCHITECTURAL AND BUILDING PATENTS

AIR CONDITIONING APPARATUS. Edward McKinney Hunt of Montclair and Edward L. Fonseca of Newark, New Jersey, Assignors to The Wilcolator Company of Newark, N. J., a corporation of Delaware. Patented Mar. 7, 1933.

This invention relates to air conditioning apparatus and has particular reference to apparatus which will provide the air in one or more rooms with the proper degree of humidity which is most healthful to the occupants or which may be required for carrying on certain manufacturing or other processes in which a definite amount of moisture is necessary in the surrounding air.

The object of this invention is to provide air conditioning apparatus which treats the air already in the room so as to render it fresh and pure without requiring the introduction of outside air, and which also continuously purifies and cools the air treated thereby in large volume so that all of the air in the room or rooms is conditioned by the apparatus in a relatively short time.

The apparatus may be inserted in the space between the studs of the wall of a room so as to lie flush with the surface thereof and present an attractive appearance in the form of a decorative panel having two louvred apertures, one for the intake of the air from the room, and the other for the return of the conditioned air into the room. After inserting the apparatus into the wall in this way, no other operations in the room, such as replastering, repapering or the like are necessary.

PAVING TILE. Henry E. Muchnic. Atchison, Kansas. Patented July 4, 1933.

This invention relates to metal tiles of pre-selected dimensions intended to constitute the wear-receiving surface of a highway, drive or runway and adapted to be placed on a road surface at the time of construction to permit certain depending portions of the tile to embed themselves in the road surface so as to firmly anchor the metal tiles in place.

The purpose of the invention is to provide a non-flexing tile provided with a traction providing surface, with the lower side of the tile provided with a plurality of anchoring portions which cause the tile to be held against movement; the tile being especially intended for use on concrete roads or trucking runways where the latter are subjected to heavy wear so as to protect the concrete against disintegrating or destructive effect resulting from the frictional and pounding action of passing traffic.

COMPOSITION BOARD. Louis A. Schulke of Lakewood, Ohio. Patented May 2, 1933

This invention relates to a reinforced composition board used as a building material. The composition board is composed of alternate layers of plaster composition and heat and sound insulating material and corrugated reinforcement made of hard pressed fibre. One surface is designed to hold the exterior plaster of a building and the inside is designed to form the interior wall surface. The board may be cut and nailed to facilitate manipulation thereof.

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THE ARCHITECT AND ENGINEER

NOVEMBER 1933

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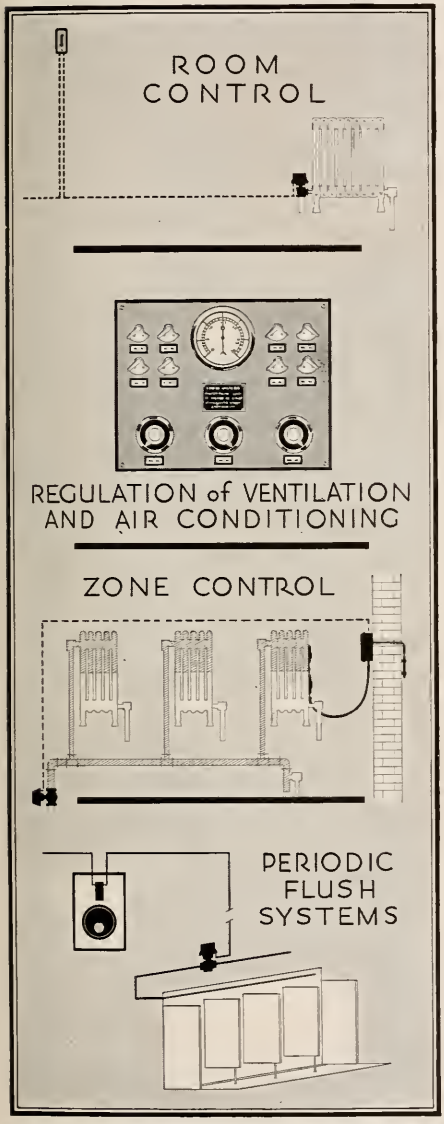

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THERE is a surprising interest in Mr. Stacy-Judd's articles on Mayan architecture which commenced in this magazine in October and will continue serially for five numbers. Students in our universities particularly seem intensely interested. Maybe it is because of a new thought which the author is advancing—the thought that from these ancient Mayan motifs we may be able to develop a real American style.

Whether in sympathy with Mr. Stacy-Judd's conclusions or not, his articles will be found time well spent in reading. They are based on travel and intensive study and are undeniably a contribution to the architectural literature of the day.

⁂ ⁂ ⁂

WITH the engineers recognizing the employee as well as themselves in their Code, the architects might follow in their footsteps and not go wrong. This Code business may be just the tonic the architectural profession needs to correct its ills. It is no secret that fees set down by the Institute have not been rigidly adhered to by member practitioners, particularly since the depression has forced them to take a job at any price in preference to starvation. Even before economic conditions made fee cutting a necessity, there was an unfortunate disregard of the accepted schedule of charges. Now if the NRA Code will bring about a strict adherence to an accepted schedule, a great evil will have been corrected.

Furthermore the Code should benefit the draughtsman who is entitled to his scale of wages commensurate with experience and talent. If the architect is going to take a job for what he can get the draughtsman finds himself in the same boat. The result is that neither is getting a fair return for his services. If the engineers and architects are to have their Code the draughtsmen are entitled to theirs. But unless the codes are lived up to by everyone they are of no benefit to anyone. To make them beneficial organization must be complete. There must be no loop-hole for bootleggers.

⁂ ⁂ ⁂

ARCHITECTS are waiting with interest Miller & Pflueger's plans for San Francisco's $3,000,000 housing project which has received Federal recognition. Efforts to discourage the government's support failed to impress the powers that be in Washington, the opposition having emanated from present apartment house owners, and was to be expected. It is only the owners of poorly constructed and poorly planned apartments, however, who need to worry. The better designed structures will always have occupants and the new housing scheme will not injure the business of these places in the least. We are looking forward to Mr. Pflueger's solution of this new housing problem with a great deal of interest. Mr. Pflueger has been trusted with a number of important commissions in the past and he has yet to disappoint us. There are great possibilities in this apartment house project. Mr. Pflueger is the sort that makes the most of his opportunities. Watch him in this, his latest and probably most important, undertaking.

⁂ ⁂ ⁂

DOWN in Los Angeles there is also a project that is interesting the architects—the new Union railway terminal. A picture of the structure appeared in the *Times* soon after the announcement was made that the depot would be built. As no architect had been appointed for the job, many wondered how authentic was the drawing which showed a modified Spanish design. The *Times* published a caption under the picture which read: ". . . . the first architectural study of the proposed $8,500,000 union terminal . . . is presented herewith. . . . The drawing is a composite of several designs and was made by C.K. Denman, local architect. Further modifications of the entrance exterior as shown in this sketch are possible, but the general plan will be adhered to. . . ."

Inquiry at the railroads' offices failed to reveal that Architect Denman or any other architect had been given the job. Gossip in architectural circles was that Harry Chandler, publisher of the *Times* and for years the station's staunchest booster, had been anxious to cap his editorial victory by being the first to publish a picture of the station—even a tentative design. Hence the appearance of the sketch which Mr. Denman had shown to the Southern Pacific, and the appearance of which made the Union Pacific and the Santa Fe exceedingly irritated. Other architects took heart, heard hopefully that the railroads planned to have their own architects work on a design in collaboration with an architectural board of review to include the best men in Los Angeles architecture.

⁂ ⁂ ⁂

OVER in England they are building steel houses (and livable) in 16 hours. Designed on the principle of the thermos bottle, the houses have an inner and outer shell, the cavities being filled with a suitable non-conducting material which renders the dwelling warm in winter and cool in summer as well as damp, fire, and vermin proof.

Works and plant are now being prepared and the first of these houses, a model of the semi-detached villa type, is being built at Newcastle to demonstrate that the steel home is better and cheaper than that of bricks and mortar.

It is contended that two men can erect a house of three rooms, scullery and bathroom with windows and doors, all ready for the plumbers, electricians and paperhangers, in 16 hours.

⁂ ⁂ ⁂

THE architectural profession has lost one of its most valuable members in the recent death of John Lawrence Mauran. St. Louis in particular and the world in general, owe much to his architectural genius, his unfailing good taste, his constant devotion to the beautiful, his practical common sense in making beauty serve the ends of utility. For forty years he had been a leader in the promotion of art in the field in which he was a nationally recognized master, his high standing in his profession having been indicated some years ago by his election to the presidency of The American Institute of Architects. Many buildings in St. Louis and elsewhere are the conceptions of his active, creative mind, and all of them are enduring monuments to his ability, his keen perception of harmony in line and form, and to the sound principles of honest construction which always guided him. His public activtiies in St. Louis and for the nation were numerous and varied, and without exception of real value.

But his talents as an artist were no greater than his charms as a man, says a writer in the *St. Louis Globe-Democrat*. Quiet and unassuming, he had no desire for the spotlights of publicity or for public acclaim, but wished only to serve capably. He had the qualities that make for warm and lasting friendships. Refinement was marked upon his countenance, as upon his thoughts, his speech and his conduct. Emerson has said that "whoever is open, loyal, true, of humane and affable demeanor, honorable himself and in his judgment of others, faithful to his word as to law, and faithful alike to God and man—such a man is a true gentleman." And such a man was John Lawrence Mauran.

VOLUME 115
NUMBER 2

THE ARCHITECT AND ENGINEER

NOVEMBER
1933

NRA MEMBER U.S. WE DO OUR PART

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Bebb and Gould, Architects

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ENTRANCE DETAIL, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
BEBB AND GOULD, ARCHITECTS

THE
ARCHITECT
AND ENGINEER

NOVEMBER 1933
VOLUME 115
NUMBER TWO

THE SEATTLE ART MUSEUM

by
HOMER M. HADLEY

THIS BUILDING HAS BEEN
DONATED TO THE CITY OF SEATTLE
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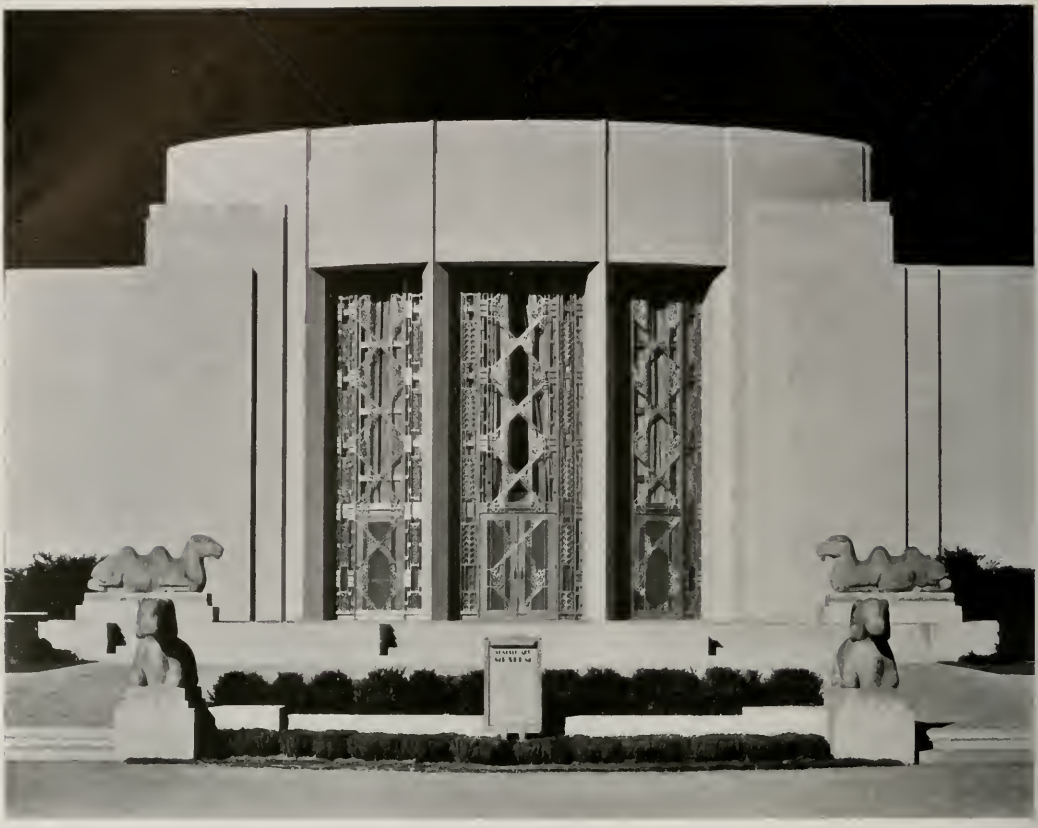
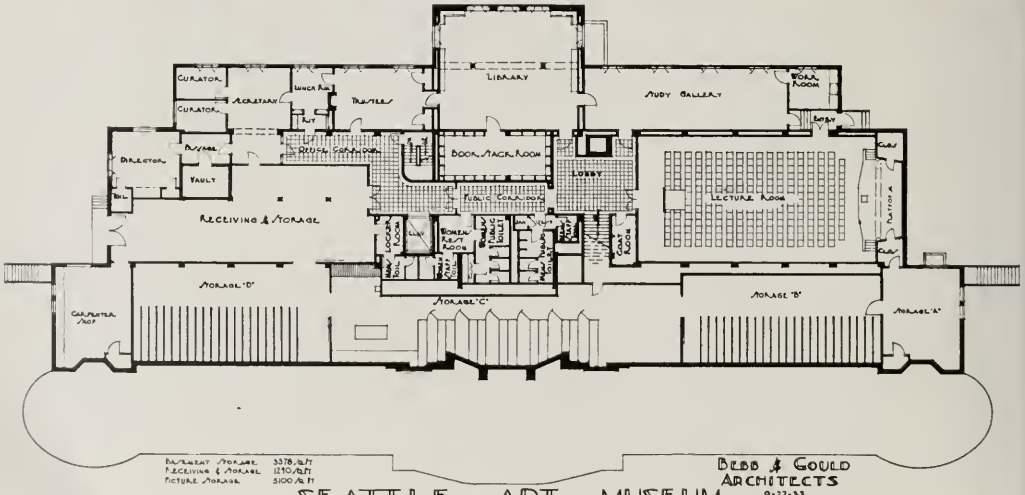
THE RECREATION EDUCATION AND
INSPIRATION OF ITS CITIZENS
IN GRATEFUL RECOGNITION OF
THE GIFT THIS TABLET HAS BEEN
PLACED BY THEIR FELLOW MEMBERS
OF THE BOARD OF TRUSTEES OF
THE SEATTLE ART MUSEUM
JUNE 1933

THOSE large calm stone animals placidly at rest upon their low stone beds beside the entrance way to the new Seattle Art Museum, have gazed with steady changeless gaze adown the centuries. The noble rams with slightly upraised heads and great curving horns lie at their ease upon their bellies, their folded legs tucked in beside them. The camels on the entrance terrace rest in similar position, their heads and humps erect, but with full relaxation in their bodies. Children of both the Occident and Orient have joyously be-





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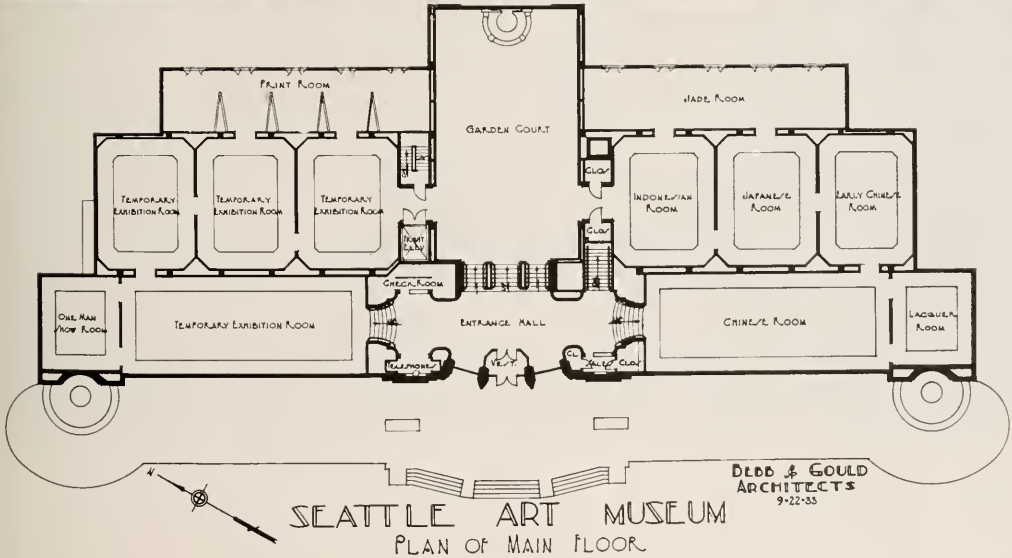
SEATTLE ART MUSEUM

PLAN OF GROUND FLOOR

SCALE 1/8"-1'-0"

SCALE IN FEET



DODD & GOULD
ARCHITECTS
9-22-33

SEATTLE ART MUSEUM

PLAN OF MAIN FLOOR

SCALE 1/16" = 1'-0"

SCALE IN FEET

FRONT VIEW, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

EAST VIEW, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

stridden them so many years that their marble backs have taken on a polish, particularly in those favored saddles between head and hump or between hump and hump. But their calm tranquility has never altered. For centuries these wondrous animals of stone stood facing on and part of is the more appropriate because their Oriental look is suggestive of what is most unique in the building's contents: the fine Oriental collections, particularly the jades, which likewise are the gift of the same gracious donors.

The accompanying illustrations tell more

MARBLE CAMEL, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

that great avenue approaching the Ming tombs near Peking. Now in a far distant place the rams gaze westerly to the rugged skyline of the Olympic mountains; now the camels rest in a land which the Ming princes knew not.

Their presence before the beautiful building given to Seattle by Mrs. Eugene Fuller and her son, Dr. Richard E. Fuller, forcibly than many a labored paragraph, the dignity and fine, pure simplicity that characterizes this new museum, the work of Messrs. Bebb and Gould. The beauty of sharp-edged, flat, plane surfaces, of keen clean lines, of silvery aluminum tracery or lacery, all find expression here. It is a building worthy of being the home of fine arts.

MARBLE WARRIOR, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

Its location in Volunteer Park on the crest of the great ridge of Capitol Hill, between Lake Union and Lake Washington, is an unusually favored one. To the west is a sweeping view across city and the broad reaches of Puget Sound, to distant wooded shores, beyond which rise up the tumbled masses of the Olympics. To the north is a great sweep over city and waters and the outlying flat open country. To the east is city and the blue waters of Lake Washington, while along the eastern skyline is the great wall of the Cascades, snow-capped for much of the year. Imme-

MARBLE STATESMAN, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

diately surrounding the building are the lawns and trees and shrubbery of the park, verdantly vigorous after the manner of such things in the happy land of the plant world.

In this beautiful setting, the white stone walls of the museum stand clean and clear. Walker-Wilkeson sandstone of selected variety was used for the main or western facade and on the narrow ends of the north and south wings. The eastern side, where future extensions may be made, is stuccoed. The structural frame is of reinforced concrete and exterior walls, behind the

ALUMINUM FOUNTAIN, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

stone and at all places except where future additions to the building may be made, are of reinforced concrete.

Here has been assembled and permanently housed a choice collection of Oriental art, the fruit of many years of personal study and selection by Dr. Fuller and his mother. Occidental art is shown in an extensive collection of large facsimile reproductions of the masters, old and modern. Ample provision of space has been made for traveling and local Northwest exhibitions. Auditoriums, study gallery, art library, administration offices, receiving and

ENTRANCE HALL, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

storage rooms, et cetera, are included.

The calm stone animals quietly resting before the main pavilion are of the fifteenth century. Five centuries ago their patient sculptors fashioned them slowly and painstakingly and lovingly from blocks of stone. Now are the sculptors gone. Now is the whole Ming dynasty gone. Now all the hopes and fears, the turbulence and passions of those days are gone and naught remains a message to us from those times except their art.

Yet what a tale is told, what intimacies of thought and feeling across the centuries

STAIRCASE TO NORTH WING GALLERY, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
Bebb and Gould, Architects

are revealed by the beauty created ages ago! A tiny chisel mark, a stroke of brush, or again, the cunning plan and arrangement whereby their purposes were brought to pass, bring in a flash the living reality of faroff times! They were our brothers!

Truly "by their works ye shall know them."

CHINESE GALLERY, SEATTLE ART MUSEUM, SEATTLE, WASHINGTON

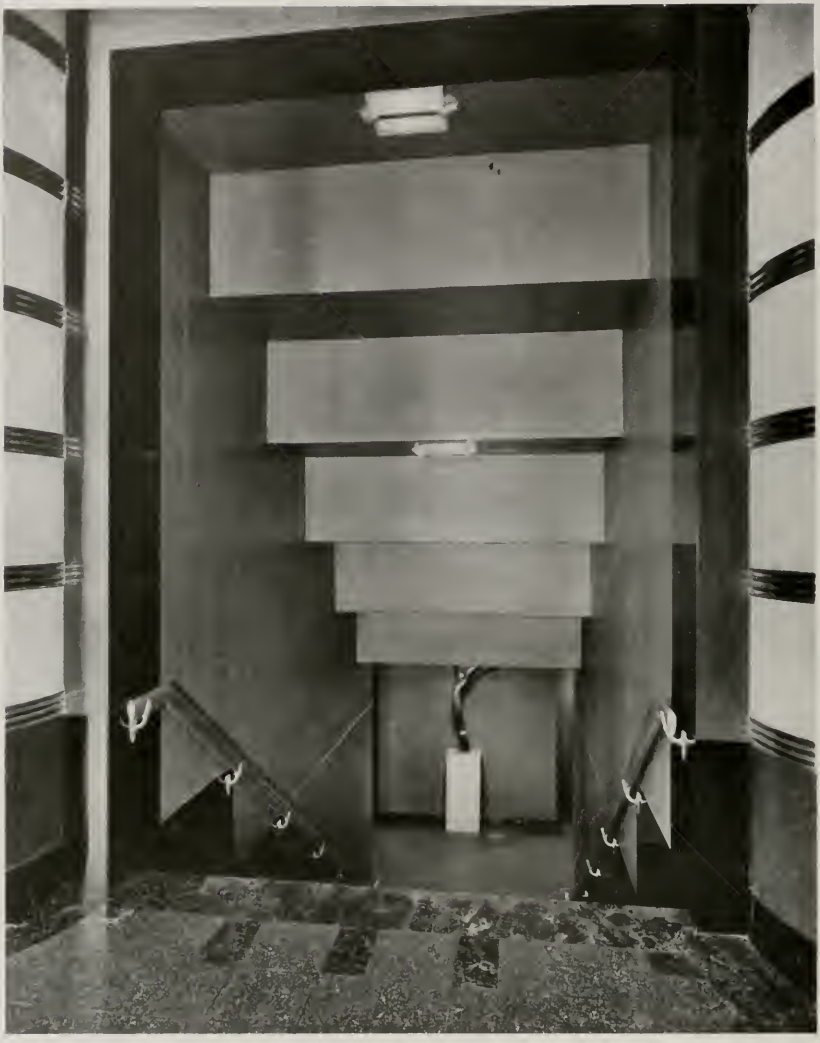
BEBB AND GOULD, ARCHITECTS

Garden
Court
in the
Chinese
ulptures

Wrought
Iron
Gates
to
Indo-
Nesian
Room

Small
Chinese
Gallery

18th Century
Lacquer
Room



STAIRCASE LEADING TO NORTH WING GALLERY,
SEATTLE ART MUSEUM, SEATTLE, WASHINGTON
BEBB AND GOULD, ARCHITECTS

DEPARTMENT STORE ARCHITECTURE

by
ALFRED C. WILLIAMS
Architect

DURING the past two or three years men have come to be more wary of experts and weary of specialists. The American tendency to romanticize or idealize is experiencing a decided slump and frankness and cynicism are the order of the day. We are, we hope, no longer clay in the hands of money-minded promotters, of worthless, often harmful propositions or of worthless, often harmful services. But life has its problems, and solutions must be found for them.

A business as much a part of life as is the department store could be no exception to this rule. It is in the business of buying and selling merchandise at a profit and every function and phase of it is directed toward this end.

For the proper establishment and the successful maintenance of a store in a suitable building, the policy of the store must be completely and definitely understood. Mechanical equipment, finishes, furniture known as fixtures, and non-selling departments, must be provided that contribute to the arts of advertising, displaying and selling merchandise and that accommodate the merchandise while in the store, on entering and on leaving it.

If the store policy is to "trade up", the selling equipment and background must mirror it. If the policy is to sell quantity, low-grade merchandise at a price, the fixtures and background must be designed accordingly. To a degree, the fixture and maintenance budget of a store will govern the design but if there is not a frank commitment as to just how far a store wishes to go, there will be, between the merchandise and clientele of a store on the one hand and the fixtures on the other, a not too happy dissimilarity. The arrangement and forms of the fixtures may be unrelated to the quality of their construction, or the backgrounds may be amusingly ludicrous with respect to the personalities and functions appearing before them.

Since the sale of merchandise is the "raison d'etre" of department stores, the purchase of it must be tended with great care. Merchandise is bought by the buyers of each department who are usually also the heads of these departments. Depending on the size of the store, a department may have a buyer and a staff of assistants and also an operative head, or there may be just one buyer for several departments with full responsibility. In large stores a section of an upper floor is relegated to the receiving of salesmen and the examining and purchasing of merchandise. Most stores send their buyers on periodic buying trips to the New York and Chicago markets. Some stores have a New York buying office. Many are members of such an organization or of an advisory service.

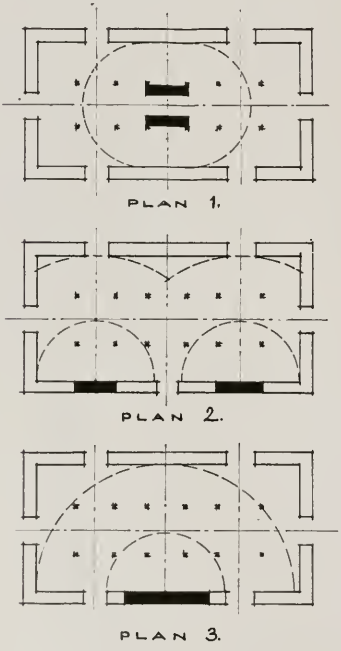
Merchandise is received at the freight room entrance either within the store in the basement or on a mezzanine or at the street from where it is conveyed to the receiving room, uncrated and checked off. Bulky merchandise is received at the ware-

The author, formerly with R. H. Macy of New York, is now connected with the firm of Olds, Wortman & King, Portland, Oregon.

house when the store is large enough to afford one. Shipments are examined by the buyers responsible for their purchase. They are then marked by stock clerks and placed in stock rooms or delivered to the selling floor.

The completion of a sale on the selling floor is followed by payment in one of four forms. In general the charge sale predominates in the department store with cash sales second in frequency, then C.O.D.'s and fourth, part pay will call transactions. Each of these involves a special treatment by the sales clerk or desk cashier.

The small charge sale can be completed with the signature of a floor walker or section manager. Charges over a certain amount must be sent through a pneumatic tube system or phoned to the credit office for approval. The phone is designed to stamp the sales check if the purchaser's account is creditable.



ELEVATOR PLOTTINGS FOR A TYPICAL DEPARTMENT STORE

PLAN	SERVICE	CONVENIENCE	STORE APPEARANCE
1.	EXCELLENT	EXCELLENT	BAD
2.	BAD	GOOD	GOOD
3.	GOOD	FAIR	EXCELLENT

How Cash Sales are Handled

The cash sale may be handled entirely by the clerk supplied with a cash register or a drawer in his or her department. Another method is to furnish a department or a group of departments with a cashier who accounts for all the money, makes change, accounts for charges, and in most instances on a "take" sale also wraps the purchase. Another system, however, requires the clerk to wrap the purchase. Sometimes the clerk records sales on a register that keeps account of individual sales quotas, surrendering the money and purchase to the cashier; or the clerk may be fully responsible for the transaction with the exception of wrapping the purchase. In this case, that is done by a wrapper stationed conveniently for a department or group of departments. In every case, on a "take" sale, the clerk delivers the purchase to the customer.

Many purchases are held in "Will Call" with a deposit. This transaction and also the C.O.D. sale must have the approval of a floor man or section manager.

"Send" purchases are held for "pick-up" or immediately disported to the delivery department by some mechanical means. Depending on the type of merchandise, purchases are packed in the department or sent without wrapping to the delivery department there to be prepared for delivery.

Many stores maintain a special gift wrapping section, while others, except during the Christmas season, extend this service in each department.

Furniture and other bulky merchandise are usually sent out directly from the warehouse or stock room if sold by sample, or from the selling floor, and are handled by a special clerk.

Endless moving conveyor belts at the ceiling or under floors or trucks propelled by delivery boys, carry merchandise from the selling floors to freight elevator lobbies or openings into spiral chutes. Dumb waiters, freight elevators or spiral chutes furn-

ish the vertical transportation to the delivery department.

In order that it be readily accessible for delivery trucks and to make possible the use of a spiral chute gravity system, the delivery department is usually placed in the basement. Since this location is not particularly desirable for either selling or non-selling departments, the chances of it being placed there are practically certified.

The planning of a delivery department is a very special responsibility and one that requires much study and ingenuity. Merchandise is received, packed or wrapped, addressed, checked, routed and picked up. The plan must provide for maximum volume at maximum speed and also minimum volume with no reduction of speed because of a decreased staff of wrappers. There must be no crossing of functions and the movement of merchandise into and out of the delivery department must be natural, direct and speedy. Space must be allowed for a "crater", a merchandise hold room and a store room for wrapping and packing supplies.

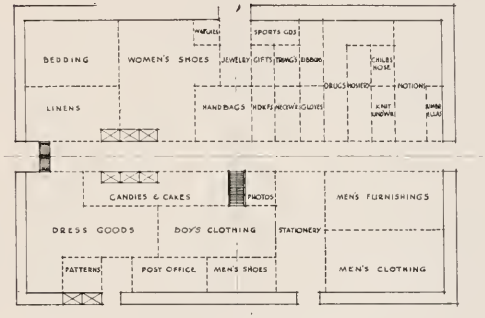
Two Groups in Every Store

The departments of a store may be divided into two groups — the selling departments and the non-selling departments. Beside the delivery department and the receiving room and in addition to the executive offices and stock rooms, there are the credit office, the bookkeeping department, the advertising department, the sign writer, the display department, the departments concerned with the training, health and amusement of the employees and the maintenance department consisting of engineers, electricians, carpenters, painters, janitors, watchmen, elevator operators, telephone operators, rest room maids, door men and others depending on the size and character of the store, comprising the non-selling group.

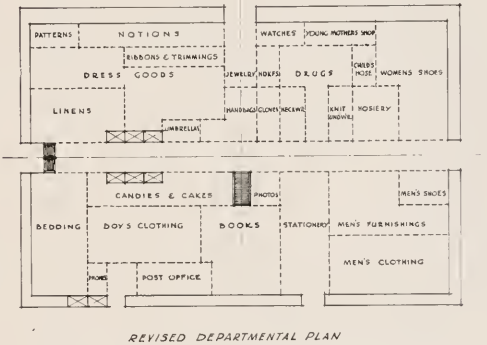
The work rooms—alteration rooms, drapery workroom, furniture finisher, and so forth—are usually considered to be indirect selling departments and are placed either adjacent to or remote from the sales departments, depending on the type of work or the service rendered. They, like the credit offices, require good light, proper ventilation and many service outlets for a various and numerous amount of equipment.

There is another group of non-selling departments that are in direct contact with the customer and intended for their convenience—rest rooms, toilet rooms, reading and writing rooms, assembly rooms, Will Call and Information Booths, a post office, a travel bureau, a checking service, an adjustment desk, and any number of additional accommodations or attractions for man, woman or child customer

The display windows are the front line of a store. They are the bill boards. They must "drag them in". Here showmanship, salesmanship, bally-hoo, artistry, and invention are combined to present the most attractive and suggestive picture to the eye



ORIGINAL DEPARTMENTAL PLAN



REVISED DEPARTMENTAL PLAN

STREET PLAN OF A TYPICAL DEPARTMENT STORE
ILLUSTRATING ONE METHOD OF OBTAINING BETTER DEPARTMENTAL RELATIONS

of what merchandise is and what it can do for you—the potential purchaser.

The best sort of background for the spectacles that careen into and out of show windows and the varied collections and ever new groupings of merchandise, is a simple one. The mental picture conveyed by the "set-up" and the all-important merchandise must not be blurred by a complex or ornate background. Durability and flexibility along with simplicity should be the major considerations in the process of creating a proper backing for windows.

The selling departments are, in brokerage terms, the "floor". In them the customer is met, his, her or its wants ascertained, means afforded immediately and pleasantly for satisfying them, payment exacted, a friendly relationship established and a warm send-off provided. The selling departments also present the merchandise to the potential purchaser, either in the form of clean, fresh stock "eager to be bought" or as a part of an interior display, important because of its proximity to the point of sale.

To these ends, well designed fixtures, correct lighting and proper heating and ventilation must be supplied. Additional essentials are adequate provision for floor circulation, proper planning and proportioning of departments, safe and well located means of vertical transportation, adequate and flexible service equipment, as well as a general atmosphere of warmth and friendliness throughout the store and a distinctive character in each department, thus defining each of them and preventing a generally monotonous effect.

Standardized Design for Furniture

Store equipment must be safe beyond a question, speedy and easy of operation and durable to a limitless degree except where fashion may dictate change. In the case of novel and seasonal details, permanency is not required or expected, nor completeness of effect. They are not an integral part of the store but are grafted on to stimulate the sale of certain commodities for a necessarily limited amount of time.

Department store furniture, better known as fixtures to differentiate them from the office furniture and the furniture used in non-selling departments—rest rooms, restaurants, auditoriums and the like—should be simple in construction, standardized in design, and of a hard wearing finish. The details of operation, the type and placing of hardware and wiring and the means for easy repair should be carefully worked out. It has been noted that provisions must always be made that will facilitate movement and adjustment within and between departments. The fixtures also must be designed to facilitate various combinations of them. It is of importance in the furtherance of this principle that each fixture be an integral unit and not dependent on any adjacent finish. Column enclosures must not finish on the tops of abutting showcases, for example.

It is well, early in the development of a scheme, to determine a standard for heights, widths and lengths of fixtures. Bases should be higher than as a rule designed. Short-sighted space economy usually keeps them at the minimum height off the floor where the afforded stock space is inconveniently low and a sure dust-catcher.

Too great a height for fixtures is a similar case in point. Here, the valuable advantages of allowing customers to see beyond one department into another and clerks to see customers in the adjacent aisles are lost in order to furnish a few additional shelves for stock.

The height of fixtures over which sales are transacted and on the tops of which merchandise is shown, is determined in relation to the width, sometimes called depth, of such fixtures. Counters, showcases and tables are included in this group. Their height varies between two feet and a half and three feet and a half.

Built-in Fixtures Undesirable

The widths of fixtures are governed by the dimensions of the merchandise that will be placed in them and also by the space areas in which they will be installed. Another determinant in the matter of widths is the size of elevator doors and passageways through which fixtures are often moved.

In the matter of lengths for fixtures, the spacing of building columns must be stud-

ied and due regard also given to the necessity of moving fixtures about within the store. There are structural limitations also to the length of fixtures. For a back fixture or shelving four to six feet is a workable length. Showcases should not exceed ten feet. Counters may vary between eight and twelve feet. Six feet is a good length for tables. The tendency is to reduce the length of fixtures.

Compactness and lightness of construction without the sacrifice of stock space and rigidity are two definite requirements in the best modern fixture work. There is a marked tendency also to avoid fixtures of the built-in type. They increase the cost of departmental changes and hinder a store in its efforts to keep up with the times. It is of prime importance in these days of fast competition that the equipment of a store be flexible and readily adjustable to varying requirements.

Compromise is a frequent alternative in department store work. The necessity of selling the customer and serving the customer, of economizing on floor space and providing adequate room for the clerk to operate, of providing sufficient tables for the display of merchandise and yet assuring the aisle space required for customers to approach those tables and circulate between them are only three of the many combinations of requirements that call for compromise.

Illumination and color might be discussed at great length. For general illumination, indirect lighting is perhaps ideal. Well engineered reflector lighting for displays calls for thorough investigation of conditions, application of a few simple rules of illumination and reflection and the selection of a proper reflector and light to do the job. Inventing or improvising or the application of thought and experiment to the problem at hand often accomplishes wonders in economy and results.

Light and Color are Important

The proper light for fitting rooms, restaurant tables, signs, stock rooms, desks and so forth is determined by the same process. Practical commodities should be lighted by practical fixtures furnishing adequate, properly directed light, while artistic commodities should be artistically illuminated.

Color must be considered with regard to its powers of reflection and absorption of light, its function as a background for merchandise, and its effect on the mood and in its relation to the tastes of the customer. In general, light colors should be used in departments featuring dark colored merchandise and vice versa. Colors in general should be warm, clean and neutral. They must always complement the merchandise. Rich tones and shades should appear only where the quality of the merchandise or the atmosphere required justifies their use. Colors notable for their power to attract the eye should be used sparingly and smartly.

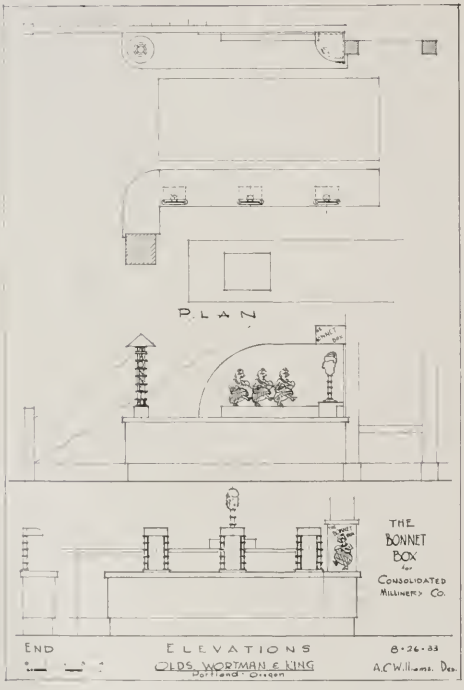
It is well, at the time the lighting of a department or a fixture is being considered, to think also about the means for the displaying of the merchandise accommodated by them. What details should be provided to allow of a pleasing and telling array of ties, shirts, stockings, panties or what not?

And how can the fixture be designed to make the merchandise it contains accessible to customer or sales clerk? There is a growing tendency toward making merchandise more accessible to the customer—the theory being that the better acquainted with the merchandise the customer may become the better are the chances that he or she will buy it.

Signs—catchy, telling, suggestive—have become a necessary part of store equipment, and their size, type and placing should be considered in designing fixtures and some provisions made for them. Price signs are particularly in evidence in modern merchandising, while the provisions for them always appear to be an after-thought. Signs are often placed where they are not visible. We sometimes find them placed where the eye strain suffered by an attempted reading discourages the deciphering of their telling message. They should never be placed where they would project into a display or stock of merchandise or conceal a department or block an important vista.

In their design and placing, a nicety is called forth that will adjust signs to the

"AN AISLE BORDERING A STAIRWAY IS CONVERTED INTO AN ACTIVE SELLING SPACE."



general requirements and conditions without hindering their functions.

Glass—clear, frosted, colored, cut and etched—is being used in ever increasing amounts in store fixtures. Their designers should also be reminded of the importance of mirrors. They should be ample in size and number, correctly placed and well lighted. Before their installation, mirrors should be examined for their reflecting qualities.

Vertical transportation in a store is important because of the number of customers using it, because it helps to increase the selling value of the upper floors, and because strict safety precautions must be taken with it. By its proper placing and operation, the customer can be more conveniently moved about and more tactfully "picked up and delivered" with regard to suggestive selling and merchandise on display.

The Elevator Problem

Stairways, in their number, construction and location, must satisfy underwriters and local building codes. Elevators must be safe, speedy and silent in operation; and,

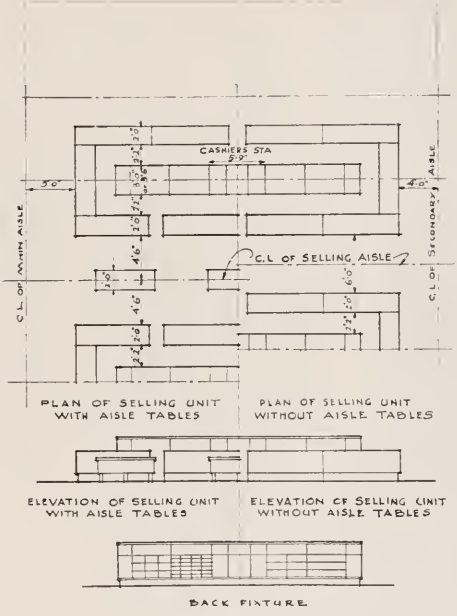
"SELF-SERVICE AT A STAND-UP FITTING MIRROR FACILITATES SALES."

like stairways, comply with all the codes. The same applies to escalators.

Elevators should be placed on inside property walls when possible. The advantage of a central location for elevator shafts in a store is outweighed by the disadvantages of breaking up the floor, reducing the apparent size of the store, causing some departments to be "buried" behind the elevator shafts and obstructing vistas that are of major importance in display work and attempts to gain an impressive store appearance.

So, elevators are usually placed on a side wall, conveniently near to the entrances and as near as possible to the center of the store for the facilitation of floor-to-floor traffic. It is better to group elevators, because a divided elevator service means additional installation costs, some confusion to customers and a greater time interval between cabs of a group.

Escalators are more open structurally and are therefore more flexible with regard


CASHIER'S STA
C.L. OF SELLING AISLE
C.L. OF MAIN AISLE
C.L. OF SECONDARY AISLE
PLAN OF SELLING UNIT WITH AISLE TABLES
PLAN OF SELLING UNIT WITHOUT AISLE TABLES
ELEVATION OF SELLING UNIT WITH AISLE TABLES
ELEVATION OF SELLING UNIT WITHOUT AISLE TABLES
BACK FIXTURE

TYPICAL SELLING UNITS

01334367

to their placing. They may be located to facilitate movement floor-to-floor between related departments.

Consistency is just as necessary in the architectural treatment of a store as in the buying or selling policy of the store. If success is the goal, great must be the attention given to detail.

Dignity, warmth, cleanliness and distinction are four characteristics that should be felt on entering a store. Vistas should be broad and long. Merchandise that is clean, attractive and well displayed should be visible on all sides. Neither a cold, guarded atmosphere nor a confused, over-crowded one is a happy entourage with which to surround a customer.

A store should be light and bright, simple in plan, with direct lines of circulation and furnished with low, plain fixtures. Main aisles may vary between ten and fourteen feet. Bargain squares are on the main aisle of most stores because of their sales value and not because they enhance the general artistic effect. They give the store a busy look and stimulate sales. Main aisles with bargain squares should never be less than sixteen feet in width.

Five to six feet is a good width for selling aisles. With tables in them, three feet on both sides of the table is sufficient.

Every architectural detail in a store should be easily recognizable. Dubious details are irritating and irritations are not conducive to purchases. Customers should always know where they are, where they belong, where they are going and what they are using. For example, a service door, though it need not be offensive in appearance, should look like a service door. An aisle for sales clerks should definitely appear so to be, for customers are embarrassed by a clerk's correction of their conduct and their own failure to recognize a place where they do not belong.

Romance Gives Way to Efficiency

Much might be written of departmental planning and the relationships obtainable between departments on the selling floors. Home furnishings are grouped and are usually found on the upper floors of a store. The small wares, the accessories and items "bought on sight" are first floor merchandise. The women's ready-to-wear sections are as a rule in one group. It is advantageous to place notions and dress trimmings near the piece goods sections, the travel bureau near the luggage, the hosiery, hand bag and glove sections proximate to the shoe department, and so forth. By grouping selling departments that are related, an opportunity is given the clerks to make suggestive sales and the possibilities of "pick-up sales" are increased, the theory being that a customer interested in one item is a good prospect for a related one.

The physical size of departments and their dimensions in relation to those of other departments is affected by their location in the store. Departments strategically placed for sales promotion must suffer a reduction in area and depend on rapid selling and re-stocking of merchandise. The average size of the merchandise, the amount of it, and the methods and fixtures utilized for displaying and stocking it, all influence the amount of space allotted to a particular department. Often departments vary in size from season to season during the year. National records are available for stores of every size (total annual sales) indicating how many square feet of area each department is entitled to on the basis of net sales, the department in question being required to do so much business per square foot of floor area.

Department stores, as a result of high pressure tactics, have grown more compact and less majestic, more business-like and less leisurely. The florid floor-walker has been replaced by the information booth. Many floors and escalators have replaced the lofty light well with its projecting balconies, grand escalier, and domical vaulting. The pleasant pastime of browsing through stores has been replaced by that strenuous activity known as shopping. The idiosyncracies and demands of its participants must be catered to. They must have a clerk when they desire one and be left alone to "shop" when so inclined.

The romance has gone out and efficiency has come in. Department stores are no longer intriguing, they are exciting. They are precise as well as polite. You do not buy something, you are sold something. All that can be done for you is done for you.

MAYAN ART AND THE CLASSICS

by
ROBERT B. STACY-JUDD, A. I. A.
Part II

BEFORE continuing further with the subject of Maya art it is necessary to establish the ancient Maya civilization in relation to other races. It is also necessary to show reasons why their architecture should be selected as possessing the most suitable themes on which to found a true American Style.

So that the evidence and conclusions may be considered from an unbiased point of view let us briefly retrace the progress of man from the commencement of what we know as civilization.

It is evident that each step up from crudity to culture was along natural lines. That is, man received all his inspirations, all his motifs, from natural form. Next to food man desired most of all shelter. Caves and trees supplied the earliest demands. But when he was forced to seek artificial means he turned to nature for his motifs or themes. Tree trunks stripped of limbs served as supports for the horizontal beams. Over the latter was spread a thick carpet of boughs and leaves. The result was an artificial shelter and incidently the birth of architecture.

This unusual so-called Maya arch was discovered almost adjoining a wing of the Casa de las Monjas at Uxmal, Yucatan. Instead of the straight sloping jambs so usually associated with the Maya art a gentle curve is formed. Where did the ancient Mayas obtain their knowledge of cutting voussoirs? Mr. Stacy-Judd believes the Greeks learned from the great Maya masters. His theory is that numerous migrations from the slowly sinking continent of Atlantis took place over a period of several thousand years. These early migrations flooded the Mediterranean borders and southern Europe, taking their stupendous civilization with them. The last of Atlantis to sink caused the remnant of the Mayas, or people of Atlantis, to migrate to Yucatan approximately 500 B. C.

Further necessity called for protection against the driving rains and winds. The early geniuses accomplished this by devising screen walls composed of closely placed saplings. Later still, mud or clay was used to seal the spaces between the saplings. It was then the first practical man-made structure came into being.

When the thinking being first began to notice and admire beauty in nature he sought to express himself by adding art to his crafts. He decorated his shelter. As may be expected these early works show no originality, merely ingeniousness.

It is conceivable that intellectual growth began not in any given center but was spontaneous as was man's beginning.

Through eons of time many races advanced to cultural heights in widely scattered centres. Others progressed but little and perhaps passed out of existence. Some on the other hand rose only to the stage of mediocrity.

natural form. The second, *romantic* or *idealistic*, treats the subject in an imaginative manner. The third commences by conventionalising the natural form until it is extended into the *abstract*. The last could be said to be the most creative and advanced of the three.

In general the first is represented by the Greek. The second by the Gothic. The

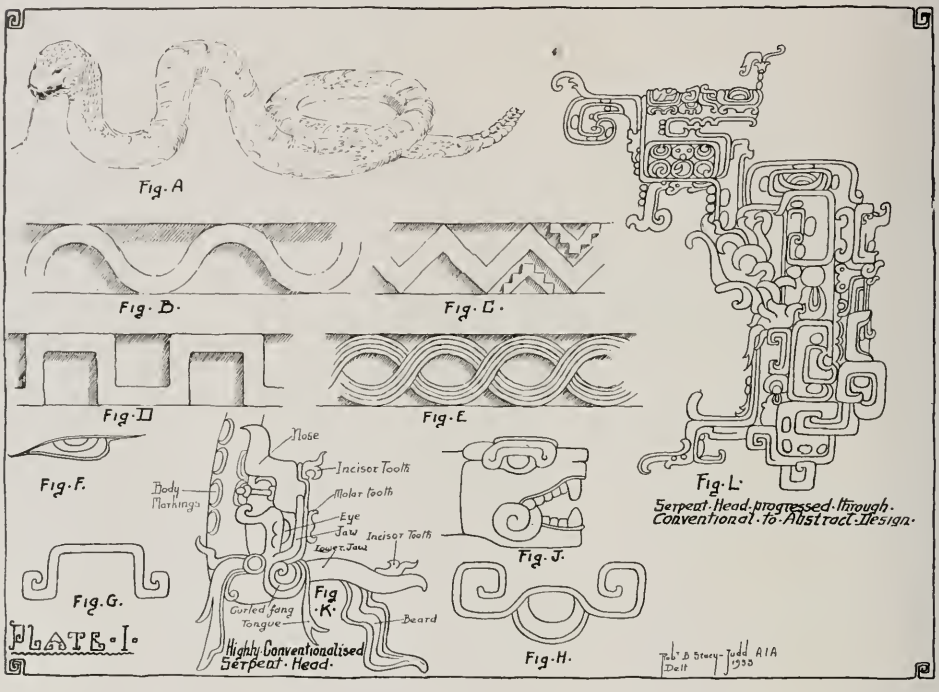


PLATE 1

Among the races that attained to the highest degree of culture were the little known so-called ancient Mayas. As we are considering these important people and their extraordinary art it is right that they be accredited their proper place in the realm of world culture. In attempting a classification of their art we have three distinct types to bear in mind. Each type may be considered a school, each with distinctive underlying principles. The first school is *realism* in design. Which means the design attains perfection as it approaches the third by the Maya. This is a very important point to remember. An understanding of these fundamental principles will materially assist in arriving at a true appreciation of the extraordinary Maya art.

Serpent Becomes Motif

To make myself clear I submit an example to illustrate briefly how the Mayas carried through conventionalism to the point of the abstract in design. On Plate No. 1 is seen a number of sketches commencing with the rattlesnake form. This lowly reptile constitutes the original motif.

Its head is shown progressed to abstract design, step by step. Fig. A. the serpent is seen in natural form. B. C. D and E represent radicles in progression. Fig. F shows the natural serpent's eye. Fig G is the conventionalised upper eye lid. Fig. H is the conventionalised serpent's eye. Fig. J the conventionalised serpent head. Fig. K the serpent head conventionalised almost

Most will agree that the designer experiences greater difficulty in creating design in the abstract than in striving for or actually reproducing realism. If that is so then Mayan art represents the highest form of culture.

Broadly speaking, Maya abstract design applies only to certain of their decorative ornament. But had they no other claim to

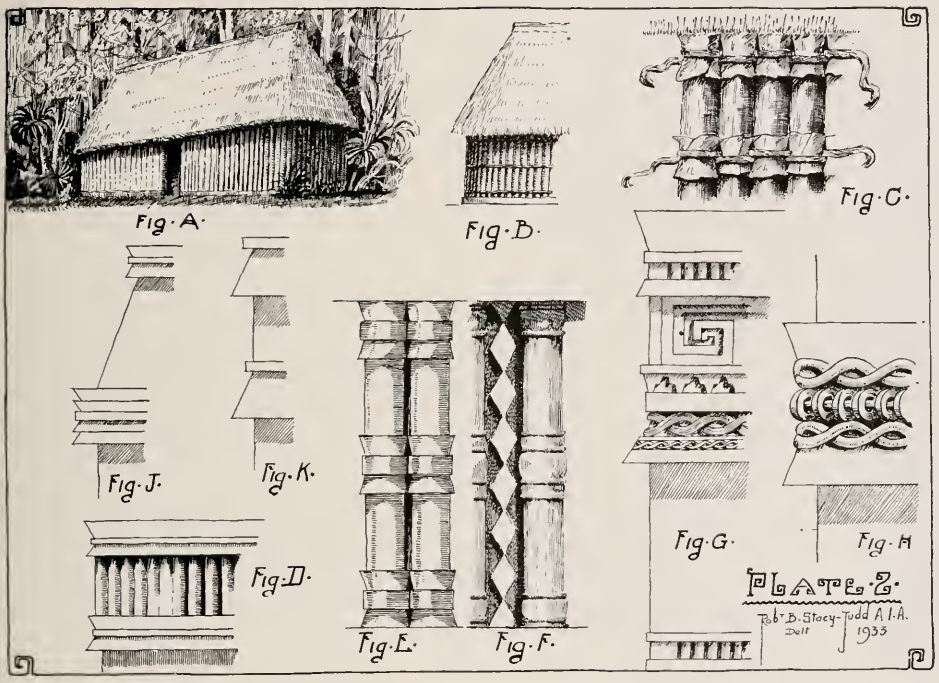


PLATE 2

to the point of abstract design. In Fig. L is seen the serpent head progressed through conventionalism to abstract design. This plate should be carefully studied. It exhibits one of the most remarkable "motifs in progression" to be seen in the whole world of art. It is almost inconceivable that the original motif for Fig. L was the head of the serpent, Fig. A.

The Maya abstract art was not always elaborate in the ultimate development. It frequently continued into extreme simplicity and beauty in line.

greatness this branch of genius alone entitles them to a position among the masters. With the addition of an unparalleled magnificence and originality in architectural design, they automatically take their place among the greatest of the great civilizations.

First Impressions Unsatisfying

The first impressions of Maya architectural form and decoration may show little of value as motifs for the creation of a new style; more especially when considering the adaptation of these motifs to modern American conditions.

However, after carefully dissecting the composite whole, classifying and tracing back each motif to its original form, a vastly different aspect unfolds. New and inspiring motifs are revealed at each step.

For example, from the lines of the so-called typical Maya arch I took the motif for the mass outline of the cupolo surmounting the tower in the Paramount

EL CASA BLANCA, CHICHEN ITZA, YUCATAN. AN ANCIENT MAYA RESIDENCE
Restored by the Carnegie Institute

Group. Again, the horizontal lines of the wide and high, continuous Maya staircases provided the motif for the vertical lines for the Ventura church and the chapel at Ixtapalapi. (See pages 16, 17, 1st article.)

In designing their stone structures the Greeks and Romans frankly used motifs from the construction details of the wooden prototype. To a certain extent the Mayas followed similar lines in architectural ornament. In other words the stage of ordinary conventionalism remained. To explain how the Mayas conventionalised art motifs (as distinguished from pure abstract design, indicated on Plate 1) the following examples are given:

DEVELOPMENT OF THE COLUMN

On Plate 2, Fig. A is seen a rough sketch of a primitive Maya hut design. It will be noted that the walls consist of saplings placed in close juxtaposition supporting the roof. Fig. B indicates a binding method employed later. The sapling walls were bound together, top, middle and bottom, probably with a vine or henequen rope. Fig. C shows a detail of the binding with the addition of a wrapping around each sapling under the binding. This wrapping was possibly of bark and intended to protect the saplings at the binding line. Fig. E shows how the last motif was conventionalised in stone ornament. The columels, Fig. D, follow their wood prototype of the earliest hut motif. To the left of the sketch the columels are shown touching each other. To the right they are separated. The top and bottom cornices show the binding

motif unbroken and running continuously around structure.

To further illustrate the process of conventionalising of natural form. Fig. E and F show the sapling and binding motifs progressed in two successive stages. Fig. G shows a section of a facade, (not a definite structure). The upper and lower cornices are divided and elaborated. (Compare with two cornices Fig. D.) The serpent motif again plays an important part in the design. Fig. H shows an elaborately decorated cornice on a building jointly discovered by Frans Blom and the author. Figs. J and K show other cornice variations.

Substantiating Classic Claim

Perhaps its decorative art alone may not entitle the Maya race to be placed among the Architectural Classics. Happily we find a score of positive reasons, overwhelmingly supporting the claim, but too lengthy to go into now. Summarizing however, it is sufficient to say that their talented geniuses deserve recognition (in addition) first for their conception and consummation of projects of tremendous magnitude, and second for their creation and perfection of a distinctive architectural style. This is not taking into account their remarkable ability in most of the remaining known sciences. They were no pigmies in thought, no mere idle dreamers. Theirs was a titanic mind trained through many centuries of practical experience. They thought in terms of enormous form, vast mass grouping. They were absolute masters of symmetry. With equal skill they executed blocks of structures and the minute exquisitely carved basrelief panel. They were experts in the sciences of acoustics, light, shade and color. Intense power predominates in every line of their temples, palaces and pyramids. Their works show a perfect knowledge and command of all laws governing design. They possessed a very high understanding of structural engineering and technical ability in construction.

Naturally in endeavoring to place correctly the Maya civilization in world history, its birth as well as its growth are matters of great importance. Scientists seeking an answer to the first question must look elsewhere than Yucatan. At present, what might be termed two main theories prevail as to the Maya origin. One the Asiatic, the other European. After a very careful analysis, after applying tests provided by contributary sciences, after using the unfailing laws of the science of architecture, there does not appear to me to be sufficient evidence—not even a logical reason—for their having sprung from either source.

The Atlantean Theory

That the Mayas came from a land much larger and more generous in natural resources than Yucatan is very evident. That they came from the lost continent of Atlantis, that they are the remnant of what I term the Mother of Civilization, that they were one of the greatest of all races of mankind, are statements no less momentous than the two above mentioned theories, but they differ, insomuch as they are supported by an abundance of corroborative evidence far beyond mere coincidence.

Environment plays an important part in national character building, and the quality of its art. There was certainly nothing to inspire one in Yucatan when the Mayas arrived. The country is flat, without rivers or scenery. It is a limestone peninsula little above sea level. The quarries produced plenty of stone but the principal objection is the smallness of the pieces. A nation which produces stupendous works on a prolific scale, as did the Mayas, is a big people mentally. Environment must possess bigness, boldness in line and color to inspire these qualities in the human race.

Form in the best types of architecture is not the result of caprice. It is the expression of structural necessities. The materials, climate and environment also play important parts as deciding factors.

That the Mayas arrived hurriedly in Yucatan is clearly indicated. Further it is shown they arrived at the height, if not actually on the decline, of their great civilization.

Nature Versus Man

One might go further and ask why choose any master other than nature.

It is an interesting point to remember that no man can think of a form he has not

seen. All mechanical inventions, all machinery, from the simplest to the most complicated, are but rearrangements of other mostly lesser forms. A wheel within the most complicated machine yet remains a wheel.

In other words man saw the principle of the wheel in the rolling log. His genius devised a thousand combinations to perform certain specific works. As with the laws seeking new motifs, there is always an endless supply. But the early geniuses dealt only with forms offering the most practical solution to the problems of the moment. They succeeded only through long centuries of experiment and elimination. The few races which we term classic, advanced their particular style to a high point of culture. In other words the field of motifs is confined to the works of but a small group of

THE AZTEC HOTEL, MONROVIA, CALIFORNIA
First structure erected in America embodying ancient Mayan motifs
Robt. B. Stacy-Judd, Architect

followed in mechanics, so with the science of architecture.

There is no need to go back to the natural form prototype. The primitive urge was to create an artificial cave or tree shelter. Now, the business of constructing artificial shelters has become, next to farming, man's largest and most important occupation. Long centuries ago he solved practically all the main building problems while adapting nature to his needs. Progress in decoration followed later but on similar lines. The business of erecting shelters, including their decorations, is fundamentally artificial. Being artificial the working standards created by the early geniuses obviate the necessity of resorting to natural form for all design motifs.

Not that man has exhausted nature in civilizations, among whom are the Mayas. As each race is decidedly individual in cultural expression, it remains to decide whether or no the combined traits or characteristics of the Mayas as expressed in their natural art provide the most acceptable themes for our purpose.

Final Reasons for Acceptance

Fundamentally, we in America are Anglo Saxon. It cannot be said that any of the hitherto known great races of classic superiority possessed characteristics greatly analogous to ours. They therefore lack a primary attraction for us. But when we study the Maya civilization we are struck with at least interesting parallels. Their principles in government, social and political economy agreed more with what we basically seek as ideal, (not what we have actu-

ally put into practice.) Their boldness and shrewdness in attacking immense undertakings; the manner in which they overcame natural obstacles; their daring spirit expressed in all the arts and sciences; their great appreciation of beauty, places us in sympathy with them.

They too were of white skin *and came across water from the east.* They also pioneered on this continent although over

LOBBY, THE AZTEC HOTEL, MONROVIA, CALIFORNIA
Robt. B. Stacy-Judd, Architect

two thousand years earlier.

Because of so many parallel traits, because of the romance, antiquity and mystery surrounding these great people, because of their magnificent arts and sciences, perhaps also because they may be termed the First Americans, the Mayas qualify more than any other race as masters to to whom we should turn.

The purpose of this article is not specifically to allocate Maya art its place among the classics by herewith producing the evidence. That work is accomplished elsewhere. Suffice it now if we presume acceptance of the position so as to be able to continue. No matter how much the rank of Maya art in the Classic field may be contested, its great dignity and magnificence will always demand the highest respect. In this sustaining argument it qualifies at least as one of the greatest, and therefore is worthy of consideration. The reasons for its choice are manifold.

Attacking the Problem

Having been convinced, years ago, of America's need to create a new Architectural Style; having found an ideal source from which to extract the necessary motifs, nothing remained but to decide the "modus operandi." This phase of the task alone developed into one of unexpected proportions. Conditions arose at each turn, apparently insurmountable, and at times very discouraging. It was a tedious and arduous undertaking, showing little or no result of value for some years.

Recalling no parallel case from which to borrow experience, I was left to my own devices.

My first act was to reduce the Maya art to "constructive sentences" and an "alphabet" as applies to the "language of architecture." After this a "grammar," or the science of the right use of the "language," was employed.

This "parsing" process reduced the Maya art as a composite whole to fundamental units.

By rearranging these fundamentals on new lines, from a standpoint of architectural "grammar," it seemed reasonable to anticipate an ultimate distinct style acceptable to American demands. Familiarity with the new forms would thereby achieve artistic heights and eventually aesthetic beauty.

It is not to be assumed for one moment that my personal efforts along these lines or even my beliefs are to be considered settled beyond further question. Further it would be ridiculous to presume that a new classical style is already established. But I do believe more than sufficient evidence exists, as we shall see later, to indicate the birth of a new classical style in the United States. What happens to it in the future depends a great deal upon American architectural geniuses and creative artists and their enthusiasm to "carry on."

That as a great nation America should possess an art of her own is self evident. That no logical basis for an American style has yet been offered is generally admitted. But now there is a definite incentive to proceed and a new field of art from which to create the new style. Naturally numerous problems must be solved and years of serious thought must be given to the subject. Due to this country's climatic conditions, it becomes not the task of an individual but one dependent upon concerted effort. Moreover, where individualism dominates architectural expression, such expression remains individual. To be expressive of national thought in the field of art, development of that art must be national. Solutions devised in harmony with each marked climatic center can eventually be combined to form one whole, one universal American style of architecture, including all its allied arts and crafts.

PRELIMINARY DESIGN FOR HALL OF JUSTICE, SAN FRANCISCO
Dodge A. Riedy, Architect

COLOR SCHEME IMPORTANT IN STORE PAINTING AND DECORATING

PROMISE of better business is inspiring people to activity. Everybody is getting ready for new days ahead. It is obvious that the owners and managers of store properties, in preparing for these new days, must supplement their optimism with practical plans for increasing the rentability and stabilizing the earning power of their stores. The first point to be considered is the renovating and redecorating of the stores in a way that will make them more desirable in the eyes of prospective tenants—or of present tenants, if lease renewals are in doubt — and the second point, granted that favorable leases can be negotiated, is holding down the decorating costs to a minimum; that is, doing the original job in a manner that will minimize subsequent maintenance bills. In every painting and decorating job there are several potential trouble-making factors which should be carefully treated.

It is generally conceded that with the return of better business conditions a great deal of painting must and will be done. The last three or four years have witnessed admitted neglect in painting for preservation and even more indifference to painting for beautification. Now it seems that there is an end to this "that-'ll-do-for-a-couple-of-months" type of painting, and a return to the point of view that good paint is a permanent investment.

While users of paint have been marking time, so to speak, the paint manufacturers have been ceaselessly studying their products; and there are several important points which should be emphasized for the benefit of property owners. In attempting to make stores more rentable, for instance, the owner, manager or lessee should look on *paint as light*. Nothing is more important in a store than visibility or illumination, whether artificial or natural, and a great deal has been learned during the last four years about the reflective values of various colors. White has a reflection factor of 84 per cent, while the lightest shade of yellow has a factor of 53 per cent.

Another vital point to be remembered is that guess-work and personal opinions with respect to color schemes need no longer be tolerated. It is possible for a proficient painter to control colors so that they will harmonize perfectly with a varying group of colors. This is important in developing a color scheme for a store where the character and color of fixtures, furnishing or merchandise are mixed. For example, in one city the walls of one paint and wallpaper store are done in a sprayed plastic finish, troweled by hand to give a flat surface, glazed in four colors (orange, blue, green and rose) and then high-lighted. The final effect is a soft shade of green and brown, harmonizing with the linoleum on the floor and presenting an excellent background for the variety of stock carried.

One of the very interesting color schemes developed for a retail store is in an eastern establishment where there was the problem of row on row of shelves for paint cans and large compartments beneath them for artists' materials. The front edges of the shelves were striped in soft bronzes. Chinese reds and midnight blacks to harmonize with the color motif of the labels on the cans. There is no reason why a small or large grocery or delicatessen store could not be similarly decorated by taking the

color scheme of labels as a basis for shelves and cases.

One other possibility which may be of advantage under certain circumstances is the painting of mirrored surfaces, either on walls, in show windows or in show cases just as though they were wood or plaster. The writer knows of one case where a store proprietor, tiring of mirrors in his windows and show cases, decided to have them removed. He got estimates on what the job would cost and it ran pretty high. It so happened that his regular painter came in about that time and, hearing of the owner's desire to get rid of the mirrors, suggested painting them.

He got the order, although the merchant was somewhat skeptical, and he did the job beautifully. The store looked as if it had undergone a complete job of alteration. In this particular case, a varnish color was applied. The first coat, composed of equal parts of turpentine and varnish, was put on very thin. It was well brushed out. There was a little less turpentine in the second coat. The original wood in the fixtures was perfectly matched in this instance, but there is no reason why a straight paint or enamel finish should not be used. One precaution must be remembered: when a store has been redecorated in this manner, don't drive in nails without first testing the surface.

Building owners and managers, in cooperation with good painters, can frequently render service to old tenants or induce prospects to sign leases by renovizing the store fixtures. A merchant in an eastern city who had two stores decided to close them and occupy one large store. There was one hitch in his plans. In one store he had oak fixtures and in the other, mahogany. A new installation of fixtures was out of the question. A clever painter suggested, however, that he be allowed to put modernized mouldings on the fixtures and paint them in an up-to-date finish. An attractive color scheme for walls and woodwork was developed and the fixtures were done to harmonize. Result: a practically new establishment, with everybody pleased.

In stores that are deep, large expanses of wall space must be covered either with shelves, display cases, or decorations. Some tenants prefer a good, substantial, cleanable surface; others wish a treatment verging on the pictorial. They do not want scenic wall papers, nor can they afford costly murals. Such a problem was ingeniously solved by Richard Smythe, architect for the John Ward shoe stores in New York. Martha Bensley Bruere had made a set of colorful posters for the firm. Mr. Smythe had these enlarged by the solar print process to six by six feet in size, had his painter apply the original colors in broad and free strokes, then shellacked the entire surface. He thus achieved a rather startling and effective piece of painted decoration at little expense.

Here is another practical pointer for the treatment of large wall surfaces. A prospect or a tenant may wish a wall panelled. Decorators are now creating highly effective panels exclusively with paint. The space is marked off into panels of the desired size. The stiles are painted slightly lighter or darker than the panels themselves, and a quarter-inch shadow and high-light line is drawn along the edge of the panel line.

There are, as was indicated at the outset, several precautions which an owner must take if he is to have complete satisfaction from a paint job. In the first place, in doing any of the several things suggested here, good workmanship is essential. Particularly is this true in imitations of stone or marble and in wood graining. It is far better to paint a store in a straight, plain color than to produce a poor imitation.

Another thing: every surface before being painted needs some preparatory work, even if it is only the removal of dust. Filling in cracks in walls and puttying nail holes are essential steps in any satisfactory piece of work, but the carelessness of some contractors and mechanics in the matter of crack filling is appalling. It warrants careful consideration.

[Turn to Page 49]

Engineering
and
Building Construction

FEATURING PROGRESS WORK ON THE
SAN FRANCISCO-OAKLAND BAY BRIDGE

ARTIST'S CONCEPTION OF SAN FRANCISCO-OAKLAND BAY BRIDGE CONNECTING SAN FRANCISCO WITH YERBA BUENA ISLAND.
ALCATRAZ ISLAND BEYOND THE BRIDGE ON THE RIGHT.

SAN FRANCISCO BAY RAPIDLY BEING BRIDGED

by
WALTER G. SWANSON

THE bridging of San Francisco Bay, so long a topic of conversation, is now so far advanced in actual construction that an inspection of the work in progress on location requires a full day.

Over a five-mile front, or most of the length of this 8¼ mile bridge, work on this $75,000,000 project is progressing with rapidity which amazes both laymen and engineers.

It was July 9th of this year that Governor James Rolph, Jr., and former President Herbert C. Hoover lifted the first spades of earth on Yerba Buena Island that officially started construction for the San Francisco - Oakland Bay Bridge, while President Roosevelt touched off a blast by telegraph which broke ground on the island, midway between the bay cities.

In the few months since this start of construction such progress has been made that now 1800 men are employed on location and 900 men in the eastern steel mills.

The San Francisco-Oakland Bay Bridge is a double-deck structure, providing on the upper deck six lanes of fast automobile and light truck traffic, and on its lower deck three lanes for heavy trucks and space for two interurban car tracks.

The bridge approach begins at Fifth Street, between Harrison and Bryant Streets, San Francisco, on a gentle slope for 4,200 feet until it reaches Rincon Hill.

At Rincon Hill a reinforced concrete cable anchorage of 68,000 cubic yards will resist the pull of the two cables, each 28 inches in diameter, from which the roadway of the bridge will be hung by 2¼ inch suspender ropes. Between the cable anchorage and the suspension bridge there will be three spans, 375 feet, 95 feet, and 375 feet long.

Two Complete Suspension Bridges

The West Bay crossing consists of two complete suspension bridges with a common anchorage in the center of the bay.

Each of the two main spans will be 2310 feet long and the four side spans will be 1160 feet each.

The base of the center anchorage will be 92 feet by 197 feet and will extend 180 feet below water and 300 feet above water.

On Yerba Buena Island the cables of the West Bay suspension bridge will be connected to steel eyebars which will be placed in inclined tunnels extending 200 feet into the rock of the island. These tunnels will be filled with concrete, anchoring the eyebars in place.

East of the cable anchorage on Yerba Buena Island the double deck roadway of the bridge will pass through the largest vehicular tunnel in the world, the bore being 76 feet wide by 58 feet high and 540 feet long.

The island section of the bridge, including the tunnel, and the east and west approaches to the tunnel, totals 2,950 feet.

The East Bay sector of the bridge consists of a 1400-foot cantilever span—third longest in the world—joined on either side to two 510-foot anchor arms.

East of the cantilever and anchor-arm structure are five 509-foot through truss

AIR VIEW OF SAN FRANCISCO-OAKLAND BAY BRIDGE, EIGHT AND ONE-HALF MILES LONG, INCLUDING APPROACHES

THE WEST BAY CROSSING IS A DOUBLE SUSPENSION BRIDGE WHILE THE EAST BAY CROSSING CONSISTS OF THE WORLD'S THIRD LARGEST CANTILEVER SPAN (1400 FEET) AND FIVE TRUSS SPANS

spans, and fourteen 291-foot deck truss spans.

The bridge reaches ground level near the outer end of the Key Route fill where the lower deck is forked so that the upper deck comes down between the interurban tracks and heavy truck lanes.

The roadways at the Oakland shore divide into three branches, one for each of the main East Bay cities. The termini of these three branches are at Seventh and

WEST BAY CAISSON. A steel and timber structure the size of a small apartment house, anchored 1100 feet west of Yerba Buena Island where it will be sunk to rock approximately 170 feet below the water line to establish the most easterly tower of the suspension sector of the San Francisco-Oakland Bay Bridge. This caisson is 74 feet wide, 127 feet long, 65 feet high, drawing 20 feet of water, and contains 28 steel cylinders, each 15 feet in diameter, now filled with compressed air to supply buoyancy.

Cypress for Alameda traffic, Thirty-eighth and Market for Oakland traffic, and Ashby and Ninth for Berkeley vehicles.

Compressed Air Flotation Caisson

The substructure of the bridge, upon which the most spectacular work is now in progress, embodies the compressed air flotation caisson, open dredging well method, the false bottom flotation open dredging well caissons, the steel sheet piling cofferdam, and earth fill.

The most westerly pier in the bay (at the bay end of San Francisco Harbor Dock No. 24) has now been completed by the steel sheet piling cofferdam method. Interlocking sheet piling was driven in a rectangular stockade formation and into this stockade, 52 by 122 feet in area, some 21,000 cubic yards of concrete was poured in the wet by means of a bottom dump bucket. Upon this monolith of concrete will be erected the most westerly tower of the bridge, 465 feet high from its base, and 40 feet above mean low tide.

In the bay, construction docks have been completed for two piers and the concrete center anchorage; and the compressed air flotation caisson for the pier supporting the most eastern tower of the suspension bridge, is now anchored in place and being sunk to rock at 170 feet below water. This caisson consists of a steel cutting edge, 74 feet, six inches wide by 127 feet long, upon which is built in successive lifts, timber walls. Within this rectangle are 28 dredging wells, 15 feet in diameter, now domed and carrying compressed air of eight

pounds per square foot pressure for buoyancy. Around the cylinders within the timber walls the concrete is placed and the caisson is sunk by the method of alternately raising the height of the walls and loading it with concrete, and pumping air into the cylinders to increase the flotation. When this caisson reaches the bay bottom the domes will be removed and clamshell dredges will excavate the earth from beneath the caisson by removing the earth through the dredging wells.

Once landed on rock, sufficient concrete is poured in the wells to bond the pour to the rock, thus producing a cellular concrete structure of unusual strength and lightness, taking into consideration the area of its base.

In the East Bay two false bottom flotation caissons are now being sunk west of the tip of the Key Route Mole. These caissons have timber false bottoms to provide buoyancy for floating, and this timber is removed when the caisson lands on the bay bottom and the caisson sinks through the soil by the process of dredging out the earth beneath it through the dredging wells.

BRIDGE CAISSON DREDGING WELL. The size of one of the dredging wells in the deep water compressed air flotation caissons for the San Francisco-Oakland Bay Bridge may be seen from comparison with the size of the men standing within one of the cylinders. Left to right are: Chas. E. Andrew, bridge engineer; E. J. Schneider, Columbia Steel Company; C. H. Purcell, chief engineer, San Francisco-Oakland Bay Bridge; Ralph H. Moore and Joseph A. Moore of Moore Dry Docks; Florence M. McAuliffe, California Toll Bridge Authority, and George Creel.

These caissons have not the steel cylinders of the compressed air caissons but otherwise operate on the same principle.

Sheet piling cofferdams are in construction alongside the Key Route Mole for the piers supporting the truss spans.

The deepest pier of the bridge will be located in the East Bay crossing where a caisson will be sunk 235 feet below the surface of the water, establishing a world's record for depth of concrete pier construction.

BAY BRIDGE NOTES

The San Francisco-Oakland Bay Bridge built without taxation, it being financed entirely out of revenues. The Reconstruction Finance Corporation has underwritten the cost of the bridge proper — $61,400,000 — and has tentatively agreed to underwrite bonds for the interurban installation estimated to be in excess of $10,000,000.

* * *

The State of California, out of the Northern California gas tax allotment, is committed to build the approaches to the bridge at a cost of $6,600,000, this amount to be returned to the gas tax fund out of revenue from the bridge before it can be opened free to the public.

* * *

The tolls charged are estimated to be those now charged by the ferries, and it is hoped that a gradual reduction of this toll may be made possible during the 20 years in which the bridge is expected to amortize its cost and pay interest charges.

* * *

The bridge will have a capacity of 16,000 vehicles an hour, or 30,000,000 vehicles per year, which is about seven times the present transbay vehicular traffic.

* * *

The San Francisco-Oakland Bay Bridge is designed and constructed by the Department of Public Works of the State of California, of which Earl Lee Kelly is Director.

The Clinton Construction Company is making rapid progress on the preliminary tunnel work on Yerba Buena Island. Piombo Bros. Co. are doing the grading.

BRIDGE EXECUTIVE STAFF

The financing of the bridge was worked out to a great extent by the Financial Advisory Committee, a citizens' group appointed by Governor Rolph at the request of Chief Engineer Purcell, working without compensation. This group consists of Harrison S. Robinson, Leland W. Cutler, George T. Cameron, Joseph Carlston, Charles O. Conrad, W. W. Crocker, E. B. DeGolia, R. M. Fitzgerald, Herbert Fleischhacker, A. P. Giannini, R. H. Glassley, E. Clarence Holmes, Joseph R. Knowland, Frank C. MacDonald, J. H. Quinn, and John P. Symes. Chief Engineer Purcell is secretary, and W. G. Swanson assistant secretary to this committee.

Within the San Francisco-Oakland Bay Bridge Division of the Department of Public Works, of which Chief Engineer Purcell is the Chief Executive, Chas. E. Andrew is Bridge Engineer and Glenn B. Woodruff is Engineer of Design.

A Board of Consulting Engineers, of the best talent available in the United States, consists of Ralph Modjeski, Chairman, Moran and Proctor, Leon S. Moisseiff, Charles Derleth, Jr., and H. J. Brunnier.

The Board of Consulting Architects now at work on designs for the concrete masses of the bridge, and who influenced the design of the bridge towers, consists of Timothy L. Pflueger, Arthur Brown, Jr., and John J. Donovan.

Borings for the foundations were conducted with the counsel of Professor A. C. Lawson of the University of California, Consulting Geologist to the bridge.

DIAGRAM SHOWING COMPARATIVE HEIGHT OF BAY BRIDGE SUSPENSION TOWERS AND RUSS BUILDING, SAN FRANCISCO

COLOR SCHEME FOR THE MODERN STORE

[Concluded from Page 42]

A store that has been vacant for some time and which shows evidence of scaling or blistering paint should be thoroughly tested for the presence of that troublemaker: moisture. Moisture gets into places in a number of mysterious ways; it sneaks in and around, up and down and he who thinks he can hide it is in for a bad time. The only thing to do with moisture in walls where paint is concerned is to eradicate it at the source, even if the process costs a little money.

Paint of an oil base should never be applied over a calcimine or water paint job. No matter how good the new oil paint is, it will not stay on for long. Thorough removal of the old materials is called for.

And a final precaution: in talking over a proposed decorative scheme with old or new tenants and in issuing work orders or in letting a contract for the work, be absolutely sure that every desired item is specifically mentioned. By doing this, a deal of annoyance and later trouble will be avoided.—*Building and Building Management.*

ARCHITECTURAL HERESIES

T. F. Hamlin in *Pencil Points*

To claim that an architect's first duty is to build well is like saying that a poet's first duty is to form the alphabet well. The architect's first duty is to create for the enrichment of the aesthetic life of generations. The architect can hire others to build well, as the poet may hire an amanuensis.

* * *

Richness of effect and architectural beauty are not incompatible, even in this machine age day.

* * *

Usefulness in a building is good, economy in a building may be necessary; yet how many cheap and useful buildings would not mankind exchange for a Parthenon?

* * *

It has been said that beauty in building is merely a rationalization of usefulness and economy. I say, on the contrary, that claims for usefulness and economy in a building are merely sops to our Puritan industrialism in order that beauty may be created.

* * *

The use of, or failure to use, forms from past styles has nothing to do with aesthetic content. Novelty and beauty can no more be equated than antiquity and beauty. The first man who learned to whistle through his teeth may have felt he was enriching the art of music.

* * *

On the other hand, merely to copy can no more produce a living art of architecture than the same method can produce a great literature.

* * *

To have created a competent and useful building is to have enriched a landlord; to have created a beautiful one is to have enriched mankind.

* * *

No great architecture has ever been founded on cheapness—not even when cheapness has been exalted by calling it economy.

* * *

No great architecture has ever been founded on mere usefulness. Men have always built buildings as serviceable as possible, but only occasionally have they achieved a noble building art. The late Victorian brown stone house may be more comfortable to live in, more serviceable, than the Colonial farm house. Is it for that reason greater architecture?

The idea of using the minimum of material and labor in a modern building has nothing to do with the art of architecture. As if Debussy or Ravel should be condemned for using all the tonal richness of a full orchestra.

* * *

Buildings, like people, live a double life. One life is the economic life—in people, earning a living, buying and selling, and contributing to the economic well-being of the world; in buildings, their costs, earnings, and economic usefulness. The other life, in people, is the life of the imagination and the emotions, of love and friendship, of social contracts, of religious ideals, or dreams. In buildings the same life is determined by their aesthetic effect upon those who live in them or observe them. And just as we say that only those people who have a highly developed life of the latter type "have personality," so we may equally claim that only those buildings which are rich in aesthetic content are "works of architecture." In other words, a building's aesthetic quality constitutes its personality.

LICENSED TO PRACTICE

At the meeting of the Board of Architectural Examiners, Northern District, on October 31, Provisional Certificates were granted to the following: Robert Stanton, Pebble Beach; Howard Moise, Department of Architecture, University of California, Berkeley.

At the meeting of the Southern District Board on September 26, a Provisional Certificate was granted to Edmund C. Abrams, 2728 West 54 Street, Los Angeles.

NEW OFFICERS ENGINEERS CLUB

The Engineers Club of San Francisco has elected the following officers and directors: President, H. J. Brunnier; First Vice-President, R. M. Alvord; Second Vice-President, Earle A. Crellin; Secretary, Roy H. Elliott; Treasurer, H. W. Whitworth; Directors, W. W. Bradley, W. L. L'Hommedieu, C. M. Gunn, S. D. Bechtel, F. T. Letchfield, and Barrett Hindes; Junior Past Presidents, W. R. Birt and Stanley Sharp.

IN CHARGE OF HOUSING PLAN

George Wellington Stoddard, Orpheum Building, Seattle, has been retained by the Puget Mill Company, Walker Building, to have general supervision of a residential construction program on Alderwood Manor Tract, Snohomish County. Plans are under way for several residences.

LONG BOND BRICKWORK ADVOCATED FOR EARTHQUAKE SECTIONS

CHARLES CRESSEY, of the firm of Train & Cressey, architects, 227 Western Mutual Life Building, Los Angeles, has set in motion a very vital discussion on "long bond brickwork," which he considers a desirable type of masonry construction in earthquake belts. Twelve inch face bricks, Mr. Cressey says, are now being manufactured in Southern California of standard depth and at less cost laid than the corresponding area of regular sizes. At present Mr. Cressey does not favor the depth of 1½ inches frequently used for 12" facing bricks, on strength account, or cost. Twelve inch common bricks are not available so far as is known.

The following letter addressed to the common Brick Manufacturers Association of California, with reference to the use of reinforced steel in masonry construction brings up an interesting point for discussion:

"Our office has been considerably interested in your new data on brickwork and we feel that you are to be congratulated on the work of your engineering department and the timely enterprise of your Association in dealing with earthquake problems.

"As personal comment, I feel that there is *too much enthusiasm* being shown for the general introduction of steel bars into brickwork. Ultimately this is likely to prove bad practice and detrimental to the industry, excepting, of course, the types of construction using poured cement in bulk with brickwork as forms.

"Vertical reinforcement tends to produce lamination and to act as a direct conductor of shock, with consequent vibration and disruption of wall bond.

"Masonry should not be regarded as concrete, nor bricks as aggregate, and mortar joints are not a matrix comparable to concrete. There is no practical hope that steel can remain sealed in even superior masonry, allowing for the many contingencies of construction and use. *Troubles due to corrosion of steel are bad enough in concrete,* but an earlier and deadlier effect seems to be the inevitable experience in brickwork, with no benefits proportional to cost. To be safe under shock, it appears to be conclusive that brickwork should be under compression or in bearing to a moderate extent at least. For this reason, a concrete bond-belt should not act as a relief beam as occurs when quasi-columns of concrete are used as vertical ties between belts, and some more definitely tensile form of tie should be devised. Columns act as "push rods" in many cases and are potentially dangerous in walls, if used without regular framing, in an earthquake area.

"I hope to see the development of quake-ties and bracing that will deal with a building as a whole (and its neighbors) rather than the trend to complicate and depend on wall construction alone.

"So far, I have seen no case of a quake-disturbed wall when built of bricks 12" long. This is a logical field for investigation and reminds one that ancient bricks had a long overlapping bond, plus a long record under shock. The readiest and best horizontal reinforcement for walls in my experience, is galvanized wire woven to large mesh lengthwise, and selvedge edges. Small mesh cuts up the solidity of the joints and produces a cleavage plane under shock."

To which R. M. Wilder, engineer for the Common Brick Manufacturers Association replied:

Train and Cressey, Architects,
321 W. 3rd St.,
Los Angeles, Calif.
Gentlemen:

We greatly appreciate your kind letter both because of your encouraging commendation of our Bulletins and because of your valuable personal comments.

Your remarks regarding the use of brick 12" long—like the ancient brick—are quite worthy of serious consideration.

If a series of tests should disclose higher value for masonry built with such units than with ordinary units, it would be a valuable finding indeed.

Your other remarks are also of interest, and writer would welcome the opportunity to discuss them with you at any time that would suit your convenience.

Thanking you for your interest, we remain,

Very truly yours,

COMMON BRICK MANUFACTURERS ASSN. OF SOUTHERN CALIFORNIA

R. M. WILDER,

Engineering Dept.

Another letter from Mr. Cressey was addressed to Prof. R. R. Martel of the California Institute of Technology, Pasadena. The letter reads in part:

"I have seen such wretched results from *corrosion of metal in masonry*, as to feel convinced that steel should desirably be kept out of brickwork. Reinforcement that is temporary and destructive in itself potentially, can only be a poor safeguard against earthquake damage.

"When opportunity occurs, I believe that you will find a very interesting subject for test, in subjecting steel bars in concrete to direct shock and vibration. I question the values of adhesion in apparently uninjured columns and beams after shock and suggest that in quake zones that it may be well to consider 'framed' reinforcement, with less reliance on adhesion. Possibly, too, some disconnection or insulation of column steel between stories, against shock and slip."

Mr. Martell replied:

"Your comments with regard to the 12" facing brick and the *corrosion of reinforcing steel in masonry*, are well worth consideration. The satisfactory performance of some old carefully designed building of well laid and bonded brickwork in Tokyo illustrated what can be done with this material."

Approval of Mr. Cressey's recommendation of a longer overlap in brick bond is indicated in the following letter by Prof. Raymond E. Davis whose remarkable report on "The Effect of the Southern California Earthquake upon Buildings of Unit Masonry Construction" is well known to the architectural and engineering professions and the building industry:

Mr. Charles Cressey,
227 Western Mutual Life Bldg.,
Los Angeles, Calif.

Dear Sir:

Replying to your letter of September 18, I think there could be no question but that a longer overlap in brick bond would possess a decided advantage, not only with regard to the resistance of brick masonry to earthquake shock but from the standpoint of economy of construction as well.

Very truly yours,

RAYMOND E. DAVIS.

A further discussion of the subject will be welcomed.

FORT LEWIS BUILDING PROGRAM

Captain R. A. Blair, Constructing Quartermaster, Q. M. C., Fort Lewis, has received authority to proceed with the following improvements:

Officers quarters—$532,732.

Non-commissioned officers' quarters—$154,325 (about 20 buildings.)

Barracks for medical detachment—$75,000.

Barracks for special troops — $144,570. Bids close Oct. 25.

Stables—$350,000.

Telephone construction—$15,000.

Gun sheds—$178,000.

Headquarters building—$85,000.

Fire and guard house—$50,000.

Quartermaster's warehouse—$60,000.

Ordnance Repair Shop—$30,000.

Veterinary hospital—$35,000.

Chapel—$75,000.

Drill hall—$150,000.

Bakery—$25,000.

Hay shed and grain warehouse—$60,000.

Magazine—$12,000.

Repairs to roads—$17,725.

Repairs to railroads—$20,000.

To complete bldgs. started last year—$32,037.

WASHINGTON UNIVERSITY NEEDS

Charles C. May, Superintendent of Buildings and Grounds, University of Washington, gives the following data concerning construction proposed for the University.

(1) Preliminary sketches for an addition to the library, estimated to cost $450,000, have been prepared by Architects Bebb and Gould, Hoge Building, Seattle.

(2) Preliminary plans for a $600,000 dormitory have been prepared by Architect John Graham, Dexter Horton Building, Seattle.

(3) Architects Thomas, Grainger and Thomas, Arcade Building, have prepared preliminary sketches for a $200,000 infirmary building.

(4) The College of Engineering, U. of W., has prepared some sketches for a $150,000 addition to the power house.

These projects are contingent on the receipt of P. W. A. funds.

With the Landscape Architects

LANDSCAPING NAVAL AIR STATION

The largest landscaping development of the kind to be undertaken by the Federal government on the Pacific coast is now two months along at the United States naval air station, Moffett field, Sunnyvale.

Three hundred coniferous trees, ranging from 10 to 25 feet in height and weighing from a half to five tons each, are adding beauty to the grounds between the brown - stucco red - tiled group of buildings that form the home station of the world's largest airship, the navy's U. S. S. Macon. Eight thousand broad-leaved trees and shrubs and the building of 40 acres of lawn will follow in the next six months.

Twenty-five men are at present engaged daily in the planting operations under the supervision of Emery A. LaVallee, landscape engineer of the Pebble Beach, Del Monte and other California developments.

Creation of a California atmosphere by use of indigenous California plant life, is the keynote for the entire planting scheme.

In this native frame-work of trees and shrubs growing within 60 miles of the airstation, the major groupings embrace sequoias, pines, cedars, cypress, oaks, bays, madrones and their kindred neighbors the toyons, lilacs, Catalin cherry, Fremontias, Oregon grape and so forth. Suitable exotics have been generously distributed in the plan to maintain continuity and proper respect for group combinations. A park-line effect will be presented by the bays and recesses in these plant group arrangements which are sharply defined by contact with the lawn carpet over all exposed ground surfaces.

Native oak trees will flank the main arteries of circulation on both sides of the major axis from the main entrance to the hangar, according to present plans, and on both sides of the outer circulating roads. California privet hedges will prolong these borders in the direction of the main entrance.

All areas to be improved have been graded and conditioned by subsoiling and cultivation. Fertilization of lawn areas follows after the sprinkling system and planting work is completed.

Careful analyses of soil and water conditions preceded the landscaping work. An excellent water supply is provided by the station's 1500 foot wells, with the supply sufficient to run the entire sprinkling system at once if that is necessary. Some black alkali was discovered in the soil and some absence of elements necessary for an ideal lawn seeding foundation. Mineral fertilizers are being carefully incorporated with the soil in proper proportions, chiefly sulphates, to correct elemental deficiencies and to serve as precipitating agencies.

When the lawn sprinkling systems are installed, covering areas fronting main buildings, the concourse on the major axis, and around the married officers' quarters, the balance of the planting will follow.

LANDSCAPE ARCHITECTS

George Gibbs of Palos Verdes Estates is in the employ of the U. S. Forest Service as landscape engineer.

* * *

Wilbur David Cook of Los Angeles is with the National Park Service, serving as technical adviser in connection with the Cuyamaca State Park, San Diego County.

* * *

Thomas E. Carpenter is engaged in landscape design in the office of the National Parks, Buildings and Reservations, Underwood Building, San Francisco. Thomas C. Vint is the Chief Landscape Architect in charge of this office, the regular personnel of which includes ten landscape architects, five architects and one structural engineer.

* * *

Emerson Knight is serving as landscape inspector, State Park Conservation Work, for part of District 4.

* * *

Frank E. Mattson is connected with the Branch of Plans and Design, National Park Service, Underwood Building, San Francisco. Charles A. Richey is in the same department.

* * *

Merel S. Sager is acting as Assistant Landscape Architect in the Branch of Plans and Design, National Park Service, San Francisco. His labors have to do with field work at Crater Lake National Park, Oregon, and Lassen Volcanic National Park, California.

ARCHITECT OPPOSED TO PATCH-WORK

By Ernest Irving Freese

Hundreds of thousands of dollars are about to be spent in this vicinity [Los Angeles] for the patching up of the earthquake-shattered school buildings. Any building that requires such wholesale bolstering has certainly lost its integrity as a piece of construction. Its mere visible damage must be "a drop in the bucket" compared to its latent instability against further lateral forces. Moreover, the probability exists that it was "ordinance" construction, or less, in the beginning. Under such conditions, it is easy to make a bad matter worse. It is perfectly possible to add so-called "bracing," "trussing," "sheer angles," "stiff planes," and all the other high-sounding rigid structural elements to an earthquake-racked building in such a manner that these stiffening elements actually become weakening factors in an already weakened building; in other words, so as to throw the entire lateral force of the next 'quake directly into the non-integral unstiffened remaining portions of the structure, and to an incalculable extent. Any engineer not dependent upon getting a "job" will agree with this assertion.

All right. Then, if the public-appeasing process of stiffening our earthquake-swayed school buildings is carried to its logical solution, all future lateral force must eventually be carried to, and so absorbed by, the very ground from which it emenates. Wherefore, there is no place to stop except at the bottom of the foundation. So, as I see it . . . and I'm hungry too, along with the rest of you . . . there is no logical way to "patch up" a badly-shaken building so as to successfully resist the action of future earthquakes. Not mathematics, but a fundamental principle of engineering, is involved. The entire building must be structurally re-designed so as to transmit all lateral force back from whence it came.

If it were possible to reconstruct a badly damaged building to make it safe against earthquakes, to do so would cost as much, if not more than to construct an entirely new building, concerning which there should be no question of doubt. From the standpoint of economy, therefore, nothing may be saved. As between a "rehabilitated" building with little or no monetary saving and a properly designed new building, all will agree the latter is much to be desired.

PERCIVAL J. WALKER

Percival John Walker, 58, founder of the P. J. Walker Company, building contractors, passed away November 3 at his home in Piedmont, following a lingering illness.

Some of the largest public and commercial buildings in San Francisco, Oakland and Los Angeles were built by the construction company of which Mr. Walker was the leading spirit.

One of Mr. Walker's first contracts was for buildings and kilns at the Carnegie Brick and Pottery Company plant at Tesla, completed in the late '90s, and the California Electric Building at Folsom and Hawthorne Streets, San Francisco. The first large building erected by the Walker Company was the 12-story Garland building in Los Angeles. Later the Pacific Electric Railway building in that city was erected.

In San Francisco Mr. Walker was the contractor on the Clift Hotel, the Federal Reserve Bank Building, the original Standard Oil Building, Commercial Union Building, Fitzhugh Building, Shell Oil Company Building, Sommer & Kauffman Building and the American National Bank.

In Oakland he built the Hotel Oakland, Capwell, Sullivan & Furth Building, Kahn Building, Oakland Bank Building and the H. C. Capwell Building, the old and new Breuner stores and the Chevrolet and Durant motor plants.

His company in recent years built the Los Angeles Subway Terminal Building, the Los Angeles Stock Exchange, Richfield Building, Bullock's Wilshire Store, Southern California Edison Building, Southern California Telephone Building and the Los Angeles Federal Reserve Bank.

Mr. Walker's interest in motoring and his devotion to its betterment brought nation-wide acknowledgment. He joined the State Automobile Association shortly after its formation in 1907, when it was a struggling organization with but a few members. In 1910 he was elected a member of the board of directors and a few months later was chosen president, serving as such for six years. During that time he developed the association to a point of being the largest of the A.A.A. clubs in the nation.

CLUB BUILDING

Architect Julia Morgan has completed drawings for a one-story frame and stucco club building at San Luis Obispo for the Monday Club.

« « « « With the Architects » » » »

OAKLAND WAREHOUSE

Jesse Rosenwald, 525 Market Street, San Francisco, is the consulting construction engineer of a one-story steel frame and concrete addition to the Safeway Stores warehouse on East 14th Street, Oakland, the general construction of which is being handled by the K. E. Parker Company. The Parker Company has recently signed contracts for more than $1,000,000 worth of new construction work, including government buildings at Bremerton, Washington, and Hamilton Field, Marin County, California.

DENTAL OFFICE BUILDING

Birge M. Clark, architect, has completed plans for a one-story frame and stucco private dental office building for Dr. L. E. Phillips, to be built at University Avenue and Byron Street, Palo Alto, California; also, plans for an addition to the Community Play House in Palo Alto.

STORE AND OFFICE BUILDING

William Mooser, architect, Monadnock Building, San Francisco, has prepared plans for a two-story reinforced concrete store and office building to be built at Stockton Street and Card Alley, San Francisco, for S. Giannone, at a cost of $30,000. There will be three stores and fourteen offices.

SAN FRANCISCO CAFE

Will King, well known as a comedian, is sponsoring a new cafe and cabaret at Sixth and Market Streets, San Francisco. Construction is now under way and it is said that $50,000 will be spent in fitting up the place. A. A. Cantin is the architect.

EDUCATIONAL BUILDING

The Trinity Methodist Church has authorized George Rushforth, architect of Berkeley, to complete drawings at once for a three-story Class C reinforced concrete educational building to be erected on church property at Bancroft Way and Dana Street, Berkeley, at a cost of $35,000.

A. A. CANTIN BUSY

New work in the office of A. A. Cantin, architect, 557 Market Street, San Francisco, includes a warehouse and office building at 4th and Brannan Streets, San Francisco, for H. B. Frasher of Fresno, at an approximate cost of $7,500; a two-story Spanish style residence on 48th Avenue near Anza Street, San Francisco, for George E. Satchell; an alteration and addition to a two-story frame residence in Redwood City, for Mrs. L. Saxelid.

TWO SMALL HOMES

Blaine & Olson, architects, Oakland, have completed working drawings for two small homes in Contra Costa County. One will be built of adobe for Douglas E. Hutton, 2223 Stewart Street, Berkeley, literary editor of the Call-Bulletin, and the other for Bud Hill, also a resident of Berkeley. Blaine & Olson are also making sketches for a Spanish style residence in San Francisco.

WALNUT CREEK RESIDENCE

Plans have been completed by Edwin L. Snyder, architect of Berkeley, for a $12,000 home of the California Colonial type at San Ramon Heights, Walnut Creek. The owner is R. W. Lowe, a retired eastern capitalist who plans to spend his summers in California.

MONTGOMERY WARD BUILDING

A new building will shortly be erected in Eureka for Montgomery Ward & Company from plans by its Architectural Department in New York City. New quarters are also planned by the company in San Jose and Salinas.

ENGLISH STYLE RESIDENCE

A one and one-half story English style residence will be built in Burlingame for a client of Chester H. Treichel, architect, 679 Haddon Road, Oakland. This is one of several attractive homes being built down the peninsula from plans by Mr. Treichel.

PERSONAL

Natt Piper, architect, has been appointed chief building inspector of Long Beach to succeed Charles D. Wailes, resigned. Mr. Piper has practiced architecture in Long Beach for 25 years and has been head of the firm of Piper & Kahrs for 16 years. He is a graduate in engineering of Colorado university.

William Lee Woollett, architect of Los Angeles, has been appointed a member of the Los Angeles Municipal Art Commission to fill the vacancy caused by the resignation of Mrs. Edna Porter Phillips.

W. W. Wurster, architect of San Francisco, has returned from an enjoyable trip East which included a visit to the Century of Progress Exposition, Chicago.

Ralph Bishop, draftsman in the office of Sutton, Whitney and Dugan, W. R. Rust Building, Tacoma, took two first prizes and tied for sweepstakes in the sketching competition at the Western Washington Fair at Puyallup.

Walter Wurdemann, member of the Seattle architectural firm of Becket and Wurdemann, left October 16 for Los Angeles to stay for six months in the office of Plummer, Wurdemann and Becket, 1108 W. P. Story Building. The Seattle business of the firm will be conducted by Frederick V. Lockman.

Leonard William Bindon, *who has* been maintaining an office in the Skinner Building, Seattle, for the past few years, has opened an office in the Medical Building, Bellingham.

George Gove of Heath, Gove & Bell, Tacoma, took a steamship trip on October 9 for Juneau and Sitka to get the lay of the land for designing the new Alaskan Old Folks Home to be erected at Sitka.

Paul Thiry of Seattle recently enjoyed a trip to the World's Fair at Chicago.

Harry E. Hudson of Seattle has returned from a visit to the World Fair at Chicago and a trip through the Southern states.

Julius Zittel, architect of Spokane and president of the Spokane chapter A.I.A., who has long been interested in the Spokane Hotel, has assumed the management of it.

ARCHITECTS HOLD INFORMAL MEETING

Members of the Washington State Society of Architects held an informal meeting Wednesday, October 12, in the office of Jones and Stanley, Medical Arts Building, Seattle. William J. Jones acted as chairman. The society passed a motion empowering the national office of the A.I.A. to act for the Washington State Society in matters relative to the administration of a code for architects.

COLLEGE PLANS IMPROVEMENTS

Washington State College, Pullman, is seeking a total of $825,000 from the P. W. A. to finance:

$233,000 chemistry building
$279,000 science building
$ 31,000 street paving
$258,000 power plant
$ 8,500 refrigeration plant
$ 8,250 livestock pavilion
$ 7,500 greenhouse.

Architects have not yet been retained.

COUNTY HOSPITAL

O. A. Deichmann, architect, 110 Sutter Street, San Francisco, has been commissioned to prepare plans for a one and two-story reinforced concrete, brick and terra cotta hospital at Redding, California, for Shasta County. The addition will accommodate fifty patients, the improvements to cost $90,000.

$20,000 ENGLISH RESIDENCE

Willis Polk & Company, 277 Pine Street, San Francisco, have plans about completed for a two-story and basement English style residence on Divisadero Street, near Pacific Avenue, San Francisco, for Stanley Sinton of D. N. & E. Walter, 562 Mission Street, San Francisco.

YACHT CLUB BUILDINGS

Preliminary plans for new club buildings in Yacht Harbor, San Francisco, are being designed by Dodge A. Riedy for the Native Sons Yacht Club; George W. Kelham for the Dolphin Yacht Club and H. C. Collins for the Aerial Rowing Club.

OFFICE BUILDING REMODELED

Plans have been completed by Albert F. Roller, architect, for remodeling the second floor of the Holbrook Building, 58 Sutter Street, San Francisco, for the American Institute of Bankers. Lindgren & Swinerton are the contractors.

RESIDENCE PLANS REVISED

Plans have been revised in the office of Arthur Brown, Jr., 251 Kearny Street, San Francisco, for extensive alterations and additions to the residence in Hillsborough of Paul I. Fagan. Approximately $40,000 will be expended.

UNION HIGH SCHOOL BUILDING

Federal aid is being sought by the Analy Union High School District for a $240,000 high school building at Sebastopol, Sonoma County.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.

Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—

Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 plus cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 83.00 per M
4x12x12 in.	91.00 per M
6x12x12 in.	119.00 per M
8x12x12 in.	224.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$91.00
6x12x5½	73.00

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.

Mosaic Floors—80c per sq. ft.

Duraflex Floor—23c to 30c sq. ft.

Rubber Tile—50c per sq. ft.

Terazzo Floors—45c to 60c per sq. ft.

Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	1.10 cu yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND

Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b. Job, S. F.) $2.45 per bbl.
Cement (f.o.b. Job, Oak.) $2.45 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 22.00 per M.
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—

Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—

Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—

Sand, 40 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—

Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—

Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 70c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per square foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—

Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

Common, $28.00 per M (average).
Common O.P. select, average, $34.00 per M.

1x6 No. 3—Form Lumber	$20.00 per M
1x4 No. 1 flooring VG	50.00 per M
1x4 No. 2 flooring	44.00 per M
1x4 No. 3 flooring	32.50 per M
1x6 No. 2 flooring	46.00 per M
1¼x4 and 6 No. 2 flooring	55.00 per M

Slash grain—

1x4 No. 2 flooring	$44.00 per M
1x4 No. 3 flooring	38.00 per M
No. 1 common run T. & G.	36.00 per M
Lath	5.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ .90 per bdl.e
Redwood, No. 2	.70 per bdle.
Red Cedar	.85 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.		
1 1-16x2¼" T & G Maple	132.00 M ft.		
⅞x3½ sq. edge Maple	140.00 M ft.		
	13-16x2¼" T&G	⅝x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$130 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.00
2 ply per 1000 ft .roll	4.25
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	10.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.
Sash weights cast iron, $50.00 ton	
Nails, $3.25 base.	
Sash weights, $45 per ton.	

Millwork—

O. P. $90.00 per 1000. R. W., $96.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $6.50 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.00 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $5.00 each.
Dining room cases, $6.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $10.00 per M.
For smaller work, average, $25 to $32 per 1000.

Marble—(See Dealers)

Painting—

Two-coat work ..... 29c per yard
Three-coat work ..... 40c per yard
Cold Water Painting ..... 10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. kegs, net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.40
2 coats, lime mortar hard finish, wood lath	.50
2 coats, hard wall plaster, wood lath	.50
3 coats, metal lath and plaster	.90
Keene cement on metal lath	1.10
Ceilings with ¾ hot roll channels metal lath	.65
Ceilings with ¾ hot roll channels metal lath plastered	1.30
Shingle partition ¾ channel lath 1 side	.60
Single partition ¾ channel lath 2 sides 2 inches thick	2.00
4-inch double partition ¾ channel lath 2 sides	1.20
4-inch double partition ¾ channel lath 2 sides plastered	2.25

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.60
3 coats Medusa finish No. 18 gauge wire mesh	2.90

Wood lath, $4.00 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $16.40 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $43.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—

From $55.00 per fixture up, according to grade, quantity and runs.

Roofing—

"Standard" tar and gravel, $5.50 per square for 30 squares or over.
Less than 30 squares, $5.75 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.

Sheet Metal—

Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—

Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural

$95 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $87.00.

Steel Reinforcing—

$85.00 per ton, set, (average).

Stone—

Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—

Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight houra are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

Chapter and Club Meetings

NORTHERN CALIFORNIA CHAPTER

The second joint meeting of the year of the Northern California Chapter, A.I.A., and the State Association of California Architects, Northern Section, was held September 29, at the Clift Hotel, San Francisco.

John J. Donovan and Harris C. Allen, Presidents respectively of the Chapter and the Association, presided, and each conducted the business affairs of his respective organization. Will Corlett was the program chairman.

During the early part of the evening, Mr. Evers introduced the architects who, during the past year had received their certificates to practice, and welcomed them into the Association.

Mr. Stringham, chairman of the nominating committee, announced the choice of candidates for office during the ensuing year to be as follows:

Albert J. Evers, President; Will G. Corlett, Vice-President; James H. Mitchell, Secretary-Treasurer; John J. Donovan, Director, Raymond W. Jeans, Director.

The report was accepted.

Mr. Bakewell proposed that a committee meet with representatives of the blue printing trade to discuss the recent increase in charges. Mr. Donovan stated that the appointments would be made by the in-coming President.

Mr. Donovan introduced visiting engineers, Messrs. Brunnier, Cope and Nishkian and adjournment of the Chapter's business session followed.

There followed a business session of the Association. Mention is made herein as it pertains likewise to the Chapter, of the report rendered by Mr. Ashley, chairman of the joint committee on the NRA Code. It was moved and ordered that the architects endorse a move to submit to the California Recovery Act Administration a code identical with the National Code.

With the adjournment of this session, Mr. Corlett presented the program.

C. H. Kromer, Chief Structural Engineer of the State Division of Architecture, was introduced. Another engagement prevented him from making his scheduled talk.

Robert H. Orr, of Los Angeles, President of the State Association of California Architects, was present. He addressed the meeting on the growth and work of the Association and announced the final sanction and inclusion of the organization in the Institute as the first affiliated state body to be so recognized.

George Louderback, Professor of Geology and President of the Seismological Society, University of California, told briefly of the movements known as earthquakes which are going on through the earth's crust. Their prevalence and the frequency of their occurrence and re-occurrence along defined fault lines was amplified.

Captain J. H. Maher, in charge of the United States Seismological Coast and Geodetic Survey, explained the work of the Survey in obtaining instrument chart records of earthquakes. Enlarged charts which were displayed, interestingly illustrated his talk.

Dr. Charles E. Derleth, Dean of the Department of Engineering, University of California, dwelt mainly upon the recent legislation enacted to provide construction to withstand earth-quake forces. He advised using caution in determining if more vigorous measures should be established. Otherwise a tremendous burden of cost would be placed upon all construction in anticipation of such severe shake as might occur but once or twice in a millennium.—J.H.M.

SOUTHERN CALIFORNIA CHAPTER

Los Angeles architects turned out almost to a man at the joint meeting of the Southern California Chapter of the American Institute of Architects and the State Association of California Architects, October 13, at the Hotel Rosslyn.

Robert H. Orr, former president of the State Association of California Architects, presided at the meeting and announced that new officers for the Southern Section of the State Association had been elected as follows: H. C. Chambers, president; George D. Riddle, vice-president; Lester H. Hibbard, secretary; and Robert H. Orr, treasurer. The directors are A. M. Edelman, David J. Witmer, John S. Siebert of San Diego, E. J. Symmes of Bakersfield, and John Byers of Santa Monica.

S. A. Bruner of the Construction Recovery Committee of Southern California, reported on the activities and progress being made by that organization. This committee includes representatives from every branch of the construction industry and was formed for the purpose of assisting in relieving unemployment by getting work started on the public works projects for Southern California which are to be financed with Federal appropriations. Since it is the avowed pur-

pose of the Federal government that plans for building construction to be done under the National Industrial Recovery Act be prepared by private architects, the State Association of California Architects adopted a resolution to be forwarded to the Governor, Boards of Supervisors and other political subdivisions requesting that only architects licensed to practice architecture under the laws of the State of California be commissioned to prepare plans for all buildings to be erected under the NRA in this state.

Wm. G. Corlett, Oakland, chairman of the advisory committee appointed by the State Association of California Architects to work with the State Division of Architecture in framing rules and regulations and building codes to carry out the provisions of the bills passed by the legislature to require earthquake resistant construction, reported on the work accomplished by this committee.

Gordon B. Kaufmann, president of the Southern California Chapter of the American Institute of Architects, presented to the Association its certificate of membership in the American Institute of Architects.

The following resolution was adopted by the State Association:

RESOLVED: That the members of the State Association of California Architects, Southern Section, requests that only architects in private practice and licensed to practice architecture under an act of the State of California regulating the practice of architecture, be commissioned to furnish architectural services for all future public buildings, and be it further

RESOLVED: That proposed public building programs be allocated as equitably as possible to local architects in order to expedite the work and relieve the unemployment situation, and be it further

RESOLVED: That a copy of this resolution be forwarded to His Excellency, The Honorable James Rolph, Jr., Governor of the State of California, and to local authorities having power of appointment for architectural services.

WASHINGTON STATE CHAPTER, A.I.A.

The September meeting, the first after the summer vacation, was held September 14, in the Gold Room of the Washington Hotel, Seattle.

The minutes of the preceding meeting were read and approved as was also the report of the treasurer. Letters were read by the secretary from the director of licenses at Olympia acknowledging receipt of correspondence from the Chapter's executive board relative to new appointments on the State Board of Licenses, and from the Board of Regents of the University of Washington, acknowledging letter requesting that the Department of Architecture be given an independent status.

Treasurer Allen then brought up the subject of remission of dues, reading the action of the Institute board of directors allowing remission of unpaid Institute dues for 1931 and 1932 on payment of dues for 1933. It was voted to have unpaid Chapter dues remitted in a similar manner.

Mr. Gould, chairman of the education committee, reported a request from Mr. Gove that arrangements be made for an exhibition of the sketches submitted in the summer sketch competition. This was referred to the program committee.

The main business program having been concluded, President Holmes introduced Walter A. Averill, of the Washington Construction League, who described what was being done by the League to promote building construction, referring particularly to difficulties encountered in securing Federal aid.

After thanking Mr. Averill for his interesting address, President Holmes, with the assistance of Secretary Gowen, read the Code for Architects as submitted to the Federal Administrator. The President then called upon John Graham to introduce T. W. Neill, of the Washington Construction League, who spoke in detail of the work of the League from the standpoint of his position as executive vice president.

NORTHERN CALIFORNIA CHAPTER

Northern California Chapter, the American Institute of Architects, conducted its regular meeting at the University of California, in Berkeley, on Tuesday evening, October 31, John J. Donovan presiding.

The business session was combined with dinner at the Faculty Club and the meeting was concluded with a program of entertainment at the School of Architecture Building.

Guests present included faculty members of the School of Architecture and quartet of singers led by Ralph Wastell.

The memory of the late Professor John Galen Howard will always be closely enshrined with "University Night". With recollection of his appreciation of this yearly manifestation of the Chapter's interest in the School of Architecture, the gathering indicated fond respect for its departed member by rising.

Members and guests who are of the faculty of the School were introduced and each responded with remarks. The group was comprised of Messrs. Warren C. Perry, Wm. C. Hays, Howard Moise, Raymond W. Jeans, Stafford Jory, Michael Goodman and Arian Torossian.

Mr. Donovan announced that it was the annual meeting of the Chapter and proceeded with the prescribed order of business.

The minutes of the previous meeting were approved as published.

In the annual address of the President, Mr. Donovan outlined the activities of the Chapter and the board of directors during the past year.

The reading of the reports of committees was deferred until the next meeting when adequate time will be devoted to their proper consideration.

The next procedure was the election of officers. There were no nominations other than the selection of the nominating committee and in accordance with this recommendation, the following were elected:

Albert J. Evers, President; Will G. Corlett, Vice-President; James H. Mitchell, Secretary-Treasurer; John J. Donovan and Raymond W. Jeans, Directors for term of three years.

In accepting the chair as president, Mr. Evers wished for the continuance of fellowship and cooperation and urged the members to strive in every way to better the profession.

Approval of the following resolution was signified by unanimous vote and in accordance with the instruction therein, copy of it is inscribed in these minutes as follows:

WHEREAS, Our retiring President, John J. Donovan, A.I.A., has devoted unremitting attention to the arduous duties of his high office and has cheerfully shouldered many added burdens in matters of grave import to professional and public welfare; and

WHEREAS, His care and diligence in these acts — performed with kindliness and genial good humor—has helped to raise the profession of architecture in public esteem and has evoked the gratitude of the entire membership of the Chapter; therefore

BE IT RESOLVED, That this, the Northern California Chapter, the American Institute of Architects, in annual meeting assembled, hereby express its sincere appreciation to its retiring President, John J. Donovan, A.I.A., for the faithful and efficient administration of his office and extend to him its affection and respect; and further

BE IT RESOLVED, That a copy of these resolutions be inscribed in the minutes of the meeting and that other copy hereof in suitable form be transmitted to our honored retiring President.

A communication from Captain Marr of the Geodetic Survey was read by Mr. Corlett, relative to the findings of the Survey in its investigation of earthquakes. It was moved and carried that the Chapter prepare suitable resolutions endorsing this work. It was further recommended that—with Captain Marr's permission—the letter be released through the press as a matter which will be informative and of general interest to the public.

There was no further business and the meeting adjourned to the Architecture Building. With Mr. Jeans acting as program leader, a time was spent in meeting with the students and observing their work. A male quartet, headed by Ralph Wastell, added pleasant entertainment with a group of musical selections. The evening was climaxed by Mr. Donovan's words of encouragement to the students in which they were urged to continue the study of their chosen vocation in school and atelier while denied the opportunity of learning its practical structure during the dull period which is upon us.—J.H.M.

SHOULD ARCHITECTURAL PRACTICE BE UNDER CODE CONTROL?

WHY a Code? Because, speaking broadly, but without equivocation, there had grown up in all industry a system amounting to dishonest, although sometimes legal, trade practice. This condition had evoluted to an explosively intolerable state. The building industry has been no exception to the general rule. Perhaps it was even one of the larger offenders. This is no time to throw stones, else there would be much cracked glass. Why should the pot call the kettle black?

The practice of architecture is so completely interwoven into the building industry that it cannot be segregated from the rest without destructive effect. The fair competitive program of the building business is founded on and built around impartial, competent, independently administered plans and specifications. Most of the unfair practice of the industry has its root in competitor prepared trick plans and specifications, designed to favor their makers above other competitors.

The building game is so technical and its players have such widely diversified interests that it must have an expert disinterested umpire. Constant and long continued practice has assigned that job to the architect. Therefore, the architect must be in any program designed to secure fair competition in the building industry.

WHO PREPARES THE CODE? The administration of the code is under the guidance of General Johnson, who is assisted by an Advisory Board consisting of prominent citizens. The officer in direct charge of the correlation of the building industry codes is Malcolm Muir, and he has as his assistant Mr. Malcolm Pirnie. Each craft group of the industry is represented by a code committee which acts as a clearing-house for the views of the various groups of members of its particular section. This central committee has the task of preparing the code for its particular section and presenting same before Mr. Muir and his associates for hearing.

Hearings before Government authorities develop criticisms from other sections of the industry, from the Government and from members of the particular section whose regulation is under discussion. These are referred back to the sectional committee to the end that, if possible, they may be reconciled and the code revised so as to be more accurately expressive of the desires of the group represented and to be more nearly in accord with the Government program.

After the different sections of an industry have filed their codes and they have been revised and re-revised, they are all written together into one code, so that they become a part of a code for the entire industry. In this re-writing, those clauses which have to do with the industry as a whole are segregated from those clauses which specifically apply to a given branch of the industry, so as to make the code for the industry as simple in application as is practical.

A joint committee of the Chicago Chapter, A. I. A. and the Illinois Society of Architects has co-operated with the general committee at Washington. This committee is made up as follows. For the Chapter: Richard E. Schmidt, Elmer C. Jensen, George Carr, Clarence Farrier, J. C. Bollenbacher, Secretary. For the Society: M. C. Chatten, Henry Schlacks, Howard White, John Holabird, E. S. Hall, Chairman.

When the code finally passes Mr. Muir and the Advisory Committee, the Director, General Johnson, submits same with recommendations to the President for his signature of approval. All codes before they become finally effective must bear the President's signature.

What Does the Code Contain? The code contains a definition of the term "architect," lays down the rules for the relationship of the architect to the building program, definitely requiring that the architect shall be honest, competent, fairly judicial, and that he must have no prejudicial interest in building material or contracting.

Concerning his employees, a minimum wage is fixed and a maximum number of hours established at regular pay, with an increased wage for overtime work.

Competition between architects is limited to minimum fees, these fees being calculated to enable the architect to pay his employees a living wage, pay for material and consulting service required and leave something in the way of remuneration to the architect himself. He is not permitted to give service, accept rebates, or use plans and specifications prepared by contractors or material men. He must so handle his business in the taking of bids as to guarantee fair practice between competing contractors—quality, quantity, skill and responsibility considered.

His remuneration for service shall come from the client and shall not be tainted with any influence which might affect his fair judicial decision in matters submitted to him in the discharge of his official duties.

As umpire in disputes between contractors or between contractor and the owner, he must act with expert skill and fairness to all concerned.

It is expected that the administration of the code will provide for a building industry committee, with sub-committees affecting each of the several branches of the code. The cost of administration will be charged to those affected by administration. Architects will be taxed individually and in proportion to the volume of their business for the support of the code. Violation of the code will be a legal offense, punishable by law. In order to insure compliance with the code, the individual's and firm's books will be more or less subject to Government inspection. Practically, the general code scheme takes the Government into firm but friendly partnership.

The whole idea of the scheme is to prevent cheating in competition. While minimum fees for service are required, they are definitely and distinctly understood to be minimum fees, with the definite understanding that high reputation, unusual skill and increased demand justify higher fees. It is probable that the administration of the code, so far as it pertains to architects, will be under the direct supervision of an Architectural Advisory Committee, consisting of a certain number of architects who are members of the American Institute of Architects and certain other architects who would properly represent the architects who belong to independent associations or belong to no organization whatsoever.

We are not permitted to make public the exact text of the code due to the fact that the code as it now stands is in a tentative state, subject to amendments from day to day as criticisms, suggestions, hearings and conclusions develop.

What Does the Code Mean to the Architect? It means a definite legal recognition of his proper place in the building industry, an attempt to give him a fair remuneration for the services rendered, and to prevent cut-throat competitive methods. It involves the annoyance of a public look into what he has deemed to be his private affairs. It means the possibility of organized employees, provides against discrimination between organized and unorganized employees, some more expense for doing business, and presumably a reduction of losses to the minimum.

Since arrangements of this kind involve collective bargaining and delegated group spokesmanship, it becomes highly desirable that all archi-

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URGE REVIVAL OF PRIVATE BUILDING TO PROVIDE EMPLOYMENT

REVIVAL of private building construction is a vital factor in the general economic recovery of this country. Its importance cannot be overestimated by the industry and the Federal Government. By authority of the National Industrial Recovery Act the Administration is organizing all industries through codes of fair practice, and is providing a large program of Public Works. These measures are primarily intended to increase purchasing power through stimulation of employment. The Public Works program is a recognition by the Government of the importance of building in the economic structure. In further recognition of its importance the Administration should at the earliest possible time organize a Building Construction Division, possibly as a part of the NRA.

The purpose of a Building Construction Division would be: First — immediately to stimulate private construction, both new and modernization work, that has been stopped or retarded by the depression; Second—to arouse national consciousness of the importance of building construction as a basic economic factor in recovery; and Third —to remove existing obstacles to building activity by bringing to bear the best minds of the nation on the manifold problems involved.

With the exception of the textile industry, building is responsible for the employment of more persons than any other single industry. It has been estimated that approximately six million workers depend upon the building industry for their purchasing power, and that eight-five per cent out of every building dollar is eventually paid to labor. According to the construction Census for 1929, about 830,000 persons were employed steadily in the erection of five billion dollars' worth of construction. To this figure must be added the thousands of workers employed in the professions, mines and quarries, factories, wholesale and retail distribution of building materials and equipment, transportation, power development, communication and other activities essential to the carrying on of building activities; and to this figure must be added still another representing the thousands of persons employed in many fields indirectly benefited by building.

Putting men to work is a nationally recognized problem. Putting men to work will increase the purchasing power of our citizens and increase consumer demand for all commodities, improve living conditions and increase the circulation of money. This is the aim of the National Recovery Administration. Approximately 25 per cent of the money thus put into circulation will go back into building in the form of rents and new construction. Re-employment of building trades workers through the revival of building construction will hasten the rate of employment in other industries and speed up the wheels of the economic machine.

Building is one of three basic industries. Agriculture, textiles and building are fundamental commodities. Over a period of years farm products show a relatively constant demand, while the demand for textiles, depending more upon general economic prosperity, shows a somewhat greater variation. Building construction demand, however, is subject to violent fluctuations and while it closely parallels the trend of general business, it has higher peaks and lower valleys. The degree to which prosperity or the lack of it, in the building industry affects general business prosperity is significant. This is true to the point that the economic condition of the building industry is a barometer that reflects the upward and downward movement of prosperity in business generally. Private building construction is the major product of the industry. It is apparent, therefore, that it must assume a position of vast importance as an element in our national economic welfare.

It is significant that agriculture is represented by a cabinet officer and an important department. It is more significant that emergency aid to agriculture has been a major objective of the Government during the depression. The building industry, equal in money value in normal times, and only a close economic second to agriculture at any time, needs and warrants the guidance and aid of a strong Federal organization.

The function of the suggested Building Construction Division can be summarized as the furtherance of a resumption of building and the restoration of confidence of potential owners and building investors. In furthering a revival of building the first objective should be to encourage and stimulate, through whatever means may

BUILD WELL—

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be necessary, the construction of buildings already planned and recognized as basically sound.

A large amount of planned construction exists. The response in 1932 of more than 1600 architects indicated at that time more than two billion dollars' worth of contemplated and planned new construction and modernization work delayed for want of building capital. This survey, obviously incomplete, is indicative of the extent of projected building. To this reported volume can be added the accumulated building shortage resulting from obsolescence and destruction. It has been stated that yearly obsolescence accounts for a two to three months' normal volume of construction. Add to these amounts the shortage produced by the estimated annual fire loss of some $500,000,000 and the exaggerated picture of overbuilt America begins to change.

Various estimates of the building shortage have been made. One asserts that there is an existing shortage of nearly one million five hundred thousand homes, representing an annual volume of two billion dollars. "Doubling up" is said to represent a need for some 500,000 houses. Ascertaining the facts of the building shortage would go far in securing the means whereby private building construction could safely proceed.

Human nature is an important element in any consideration of building shortage. So long as human nature remains unchanged, people will always want new and better buildings. Desire to build has not been changed by the depression, it has merely been temporarily frustrated. Thousands of people would build new houses, improve existing properties, or invest their funds in sound building ventures, if their fears of the future were allayed or their judgment that it is safe and economical to build now were confirmed by high authorities.

Restoration of confidence in both potential building owners and the financiers of building operations is essential to building recovery. Owners fear that the country is overbuilt; they are alarmed by the mortgage foreclosure situation and find it difficult or impossible to secure money with which to satisfy their desires for building. Sources of building capital — involved with foreclosed properties, frozen assets and uncertain that new structures will be safe income-producing properties, or that home owners will have jobs and thus be able to meet their obligations—hesitate to advance money for any kind of construction.

The fears of both owners and capital must be overcome before any impressive amount of private building can proceed. What is needed is a widespread campaign to publicize the country's actual building needs, to restore confidence, to stimulate

the desire for new building, and to sweep away obstructions to the flow of money into the construction industry.

The largest single obstacle to building recovery is lack of capital. Investors hesitate or refuse to advance capital because they question the safety of investments in buildings. Safety in building investments merely means that commercial structures can be operated at a profit and that the owners of property not in the commercial class have employment or profitable businesses that assure their ability to meet such obligations as rent, taxes, interest and repayment of the mortgage principal. The ability of individuals to meet their obligations is largely dependent upon general business prosperity, which in turn hinges so greatly upon prosperity in the building industry.

Increased employment in all branches of industry will automatically clarify the present mortgage and foreclosure situation. Restoration of gainful employment will provide workers with money to meet their obligations, and the necessity of foreclosures, moratoriums and forced sales with their attendant losses, so disastrous to the maintenance of economic balance, will disappear.

America is not financially "broke." Money still exists, but it is not finding its way into building channels. Under proper safeguard and stimulus it would. The liquidation of distressed properties; formulation of reasonable mortgage laws which will make financing of building construction safe, easy and equitable; and determination of interest rates fair and attractive to both borrower and lender are matters for experts. These things are not beyond solution. They are problems that confront the sources of building capital. They require a coordination of factors that will provide a coherent program for both real property and construction.

As an aid toward restoration of confidence, assurance of building as a good investment, and a guide to an intelligent construction program, a national building inventory is recognized by technically trained men as highly desirable. This inventory is not visualized as a long-drawn out fact-finding procedure. If correctly organized by regions, communities and districts, it can be obtained in a relatively short time by unemployed technical men. Existing agencies can be utilized in obtaining such essential data as existing properties, occupancy-vacancies, new construction and demolitions, deed transfers, mortgages, foreclosures, and population movements. In some cities such surveys are now available in whole or part; other cities have started surveys or are contemplating making them.

A Building Construction Division under government leadership would properly take cogniz-

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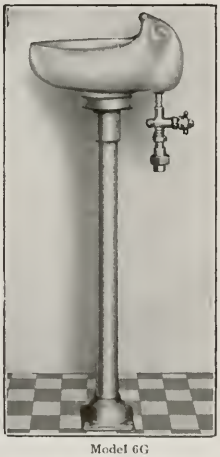

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ance of the legal measures necessary to modify existing mortgage laws or to secure uniformity in such laws. It should also obtain and interpret a national building inventory. Through qualified committees, studies leading to a solution of other related problems can have important bearing on the economics of building. One in particular is the serious economic liability which exists in antiquated building codes. Not only do many building codes saddle an unnecessary cost burden on the building industry—a cost ultimately paid by the purchaser—but, through specifying construction methods instead of demanding performance, present a distinct handicap to progress in building construction.

Further there is need of much educational effort to inform the public and those concerned with building as to economic liabilities of improper financing and poor construction created by unscrupulous or uninformed individuals. It cannot be shouldered by the building industry alone; and there is an urgent need for some centralized agency which by disseminating information will finally effect many needed reforms.

ARCHITECTS' CODE

[Concluded from Page 62]

tects identify themselves with membership in some architectural society which best expresses their views.

What is the Present Status of the Code? The code committee of the American Institute of Architects has been duly authorized by all of the Chapters of the Institute and all of the State Societies to represent them in negotiations looking towards the adoption of an architectural code.

A tentative code has been prepared and has gone through several revisions. The central committee has had criticism and suggestion concerning its work from the various architectural societies and individual architects. We owe a great debt of gratitude to the untiring efforts of this committee. Work of this sort involves the reconciling of many diversified interests. The harmonizing of differences always means compromises. No one gets exactly what he wants. When the code is finally perfected, made a part of the general building code, approved and finally receives the signature of the President, it will still be an imperfect code and must contain provisions for elasticity in administration, subject to the good judgment of appropriate executive authority. — *Emery Stanford Hall in Monthly Bulletin, Illinois Society of Architects.*

BUSINESS BUILDING

Leonard Wm. Bindon, Medical Building, Bellingham, is preparing plans for a downtown business building.

BOOKLET ON FIREPROOF HOMES

From Des Moines, Iowa, comes an interesting story about home building. It is contained in a booklet published by the Portland Cement Association, "Our New Home Is Fireproof," text for which was written by Roberta Weeks (Mrs. Leo Weeks), a housewife.

The home described and illustrated was designed by Amos B. Emery, architect of Des Moines. The house is built with fireproof walls and floors, and Mrs. Weeks tells why. She says it offers many features not ordinarily found in America's conventional homes. The living room, for example, is on the second floor. A home "designed for living," it's cost was relatively low, being listed in the $5,000-to-$7,000 class.

The free booklet, "Our New Home Is Fireproof," may be obtained by writing to the Portland Cement Association, 33 West Grand Avenue, Chicago, Illinois.

PORTLAND ARCHITECTS BUSY

Ernest Kroner, 556 Pine Street, Portland, has prepared plans for an observatory to be built by the city of Portland if Federal aid can be obtained.

W. F. Higgins, Terminal Sales Building, has prepared plans and filed an application for funds under the P. W. A. for a community house to be erected by the Presbyterian church.

Ernest Kroner, 556 Pine Street, Portland, has completed plans for a $3500 chapel for the Faith Evangelical Lutheran Church.

NEW KEWANEE COMBINATION BOILER

The Kewanee Boiler Corporation has a new booklet out which gives detailed information on residence type boilers manufactured at the company's plant in Kewanee, Illinois. The pamphlet is numbered Catalog 88, A.I.A. file No. 30C1. The new Kewanee type "R" boiler—an all purpose boiler for heat, hot water and incineration, is illustrated and there is considerable data and measurements of value to architects and heating engineers.

ALUMINUM BOOKLETS

The Aluminum Company of America, with headquarters at Pittsburgh, announces they have just revised their booklets, "The Welding of Aluminum" and "The Riveting of Aluminum." These brochures give the latest information on joining aluminum and include much data not contained in the earlier editions.

Charles H. Diggs is with the Regional Planning Commission, Hall of Records, Los Angeles and L. Deming Tilton is a member of the Santa Barbara Planning Commission.

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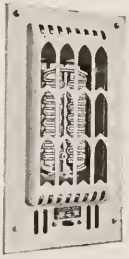

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ROADSIDE DRINKING FOUNTAINS

By J. R. McDERMOTT *in Roads and Streets*

PROVISION of suitable safe drinking water along the public highways is being recognized as a proper function of state government, either through its highway department alone or in cooperation with its department of public health. Among the measures taken are included sanitary control of municipal water systems, testing of private supplies to which the traveling public is invited to have free access, and the construction of public water supplies at practical points contiguous to the public highways, all of which facilities should be properly placarded for the information of the motorist when sanitation is assured. It is believed that the providing of public drinking fountains and their maintenance constitutes one of the finest legitimate forms of advertising possible for a state and for its state highway organization.

In mountainous country especially it is frequently possible to locate adequate sources of water with which to provide this meritorious service for the convenience of the motoring public. During the past year the writer had some limited experience in carrying forward such a program and believes that it may prove of interest to outline some of the simple cardinal principles followed.

A spring of suitable volume capable of being developed and protected is the essential prerequisite. Protection must be had both against contamination and against destructive vandalism. For this reason the source should best be at a distance of a few hundred feet from the highway. A spring located up to 2,000 ft. distance from roadside will not prove unduly expensive to pipe to the fountain site. Once both the palatability and the purity of the water are determined, arrangements for the supply must be consummated by purchasing or lease. Excellent cooperation may generally be secured from property owners by the exercise of proper diplomacy and frankness as to the intended purposes. The entire water supply should be captured at its source in a concrete or masonry box provided with a hinged locked lid to permit of ready access for inspection and cleaning, this lid to be watertight or so raised above the top level of the box as to prevent the entrance of water from above. All surface water must be ditched away from around the spring box to guard against contamination. From this box a feed line leads to the fountain and also a short overflow pipe to carry off surplus water. The immersed feed-pipe should have a down-turned pipe elbow and short nipple protected with a fine mesh copper screen through which the water may rise into the line.

Granting the availability of the water, the fountain site should be selected among pleasant sur-

roundings with ample parking facilities and should be readily visible for a few hundred feet in either direction along the highway. Suitable shade and adjacent picnicking facilities are very desirable if practical. It is firmly believed that the offset distance from face of fountain to the outer edge of the nearest lane of the highway should be a minimum of 20 feet, thus providing at least two parking lanes entirely off the road surface. A single lane on each side is objectionable as it tends toward creating traffic confusion. In some instances it has proven both practical and desirable to provide for one or more lanes in the rear of the fountain, in addition to the two front lanes.

Stone masonry, using rock native to the vicinity appears to be the most attractive material for construction, as such work harmonizes with its setting. The design of the fountain is a matter of taste and may range from the simple to the elaborate, from the rustic to the finished, but should generally be both substantial and conservative. It should include provision for the direct refreshment of the patron, for filling of water containers, and for serving of the automobile. A highly satisfactory arrangement has proven to be two sanitary mouthpieces one on either side, with a gooseneck sidestream mouthpieces, one on either side, with a gooseneck pipe at the front or rear, high enough for bottle or bag filling and for washing the hands, the overflow from all openings leading into a small low basin at the rear from which animals could drink. The water should rise about 2 to 3 in. above the mouthpieces which should be at a height of about 42 in. above the ground. Unused water drips into a small splash basin 6 to 8 in. depth with screened discharge so arranged that no water will be pooled in the basin.

An ideal water source should furnish sufficient water that continuous flow is had through all three discharge openings mentioned. If the supply is inadequate to provide for such continuous flow, fewer discharges may be provided or the mouthpieces may be equipped with hand valves of the automatic-closing type, or a self-closing faucet may be used on the bottle-filling pipe. Should the temperature of the water be too warm for palatability, the feed-line from the spring may lead into a deeply buried cooling tank or basin placed immediately adjacent to the fountain. All pipe fittings in and about the fountain should be of brass and so arranged that pressures may be independently controlled at each discharge opening. Valves for this purpose may be conveniently grouped within a small control box built into the masonry at the rear of the fountain with access to same through a securely locked but inconspicuously located hand-door.

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Of The Architect and Engineer, published monthly at San Francisco, Cal., for October 1, 1933.

State of California
City and County of San Francisco
SS.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the Business Manager of The Architect and Engineer and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, The Architect and Engineer, Inc., 68 Post St., San Francisco, Calif.

Editor, F. W. Jones, 68 Post St., San Francisco, Calif.

Managing Editor, none.

Business Manager, W. J. L. Kierulff, 68 Post St., San Francisco, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern its name and address, as well as those of each individual member, must be given.)

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W. J. L. KIERULFF, Publisher.

Sworn to and subscribed before me this 21st day of September, 1933.
(Seal) Mary D. S. Hudson.
(My commission expires Dec. 22, 1936.)

AIR PAGEANT

Outstanding aviation aces of the United States and Europe are to take part in the Pacific International Air Pageant, Saturday, December 16, and Sunday, December 17, at the Curtiss-Wright San Francisco flying field, San Mateo, under the auspices of the National Aeronautic Association, and fostered by civic, patriotic, veterans, community and fraternal organizations of Northern California. The meet will be the first major winter air show west of Chicago, and the first International Air Pageant in the history of aviation in Northern California. Capt. Frank A. Flynn, national vice-chairman of the contest committee of the National Aeronautic Association, is technical director, and Joseph O'Connor, 401 Russ Building, San Francisco, director of numerous sports events and expositions, is manager of the two-days' sky pageant.

State and citizens' committees are being organized to take an active part in preparing for the mid-December aerial meet, and civic and county organizations of San Francisco, San Mateo, Oakland, Alameda, San Jose, Santa Clara and the north shore section of the bay district have already formed working committees to assist in the show arrangements. For many years, Miami, Florida, has been the only city in America to play host to a winter air meet, and leaders of the citizens and executive committees for the December air pageant here are hopeful of vieing with and possibly eclipsing the Miami air attraction, by drawing most of the famous fliers of the United States and Europe here in December.

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RECENT ARCHITECTURAL AND BUILDING PATENTS

STORE FRONT SASH. Angus N. McDonald of Detroit, Michigan, Assignor to Detroit Show Case Co., a corp. of Michigan. Patented Mar. 7, 1933.

Angus N. McDonald has invented a supporting structure for large plate glass panes which has particular reference to what is termed the sash portion of such a structure, this portion forming the supporting base of positioning the window panes of large display windows.

An object of the invention is to facilitate the installation of large plate glass panes in store fronts, and the like, at the same time providing a structural element which is artistic and which may be made in conformity with any desired type of architecture, to eliminate all surplus elements which customarily form portions of the built up composite metal window sash for such glass plates and to provide a construction which embodies a minimum number of co-operating elements which may be quickly positioned with respect to one another and readily secured in position to properly support a plate glass in a manner superior to what has heretofore been available.

BUILDING WALL STRUCTURE. Russell C. Groef of Westfield, New Jersey. Patented April 25, 1933

This invention relates to improvements in building wall structure and method of producing the same, with particular reference to an improved assembly of materials for use in the erection of building walls.

This invention has for its principal object to provide a novel means for producing cast concrete wall structures, comprising fabricated wall form units capable of being quickly assembled together so as to furnish a form to receive and shape cast concrete into a wall core; parts of said form units

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being removable from the exterior side of the wall core, and other parts thereof remaining as a permanent part of the finished wall structure; said latter parts having arranged in assembled and supported connection therewith an inside wall finish so disposed as to be spaced from the cast concrete wall core to provide intermediate insulating air space there between.

The invention has for a further object to provide novel wall form units capable of being assembled together one with another in interlocking, self-sustaining relation; each unit comprising outer and inner panels, spaced apart by interconnecting and spacing means so as to provide an intermediate wall mold to receive cast concrete for the formation of an integral wall core; each unit being provided at its inner side with projecting carrier elements to receive and attach, in off-set or spaced relation to said inner side, corresponding interior finishing panels, which become a permanent part of the completed wall structure.

BUILDING CONSTRUCTION. John B. Cuneo of San Francisco, Patented May 9, 1933.

This invention relates to improvements in frame building construction wherein secondary or auxiliary studding is arranged in proximate parallel relation to the primary or main studding and directly under and supporting the joist of said studding, whereby the greater portion of the load of said joist is directly supported upon said secondary studding, operates in conjunction with separators for supporting spacers and fillers for said joists whereby a more rigid supporting structure may be provided.

The construction comprises the usual studding and joists of a frame building, secondary studding members applied to the usual studding and directly under the usual joists, separators mounted between the secondary studding and the joists and partially held

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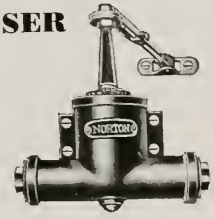

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in position by the weight of the joists, and spacers for said joists resting upon the separators, the spacers, separators and joists being supported directly upon said secondary members.

ICE RINK STRUCTURE. Martin R. Carpenter, Chicago, Illinois. Patented July 11, 1933.

The invention relates to rinks wherein ice is artificially formed on a floor, and has reference more particularly to the construction and mounting of floors of this character so as to expand and contract freely and without any detrimental effects under the changes of temperature which necessarily occur.

In ice rinks a floor of concrete or other composition and of relatively large area is usually provided, having a curb around the edge and pipes embedded in the floor through which a cooling medium is circulated from refrigerating apparatus for freezing water on the floor to form a layer of ice thereon, and such floors, on account of their large area and the variations of temperature to which they are subjected, expand and contract to such an extent that when constructed in accordance with the best practice heretofore known, they soon break, buckle and disintegrate and cause excessive trouble and expense.

This braking down of the floor, while resulting principally from repeated expansion and contraction, is due primarily to cracks or fissures which have been provided in the floor, when built, in the form of seams or expansion joints or which may subsequently develop on account of inadequate or improper precautions for preventing same, as for example; insufficient freedom of movement or floating action of the floor to permit the necessary expansion and contraction without binding or cramping strains which in the expansion cause buckling and in the contraction cause pulling apart of portions of the floor; lack of suitable and properly arranged rein-

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forcing to withstand the strains of expansion and contraction, and particularly insufficient tying together of all parts of the floor to insure drawing inward or return movement thereof in contraction; improper mounting and impairment or breaking down of the floor supporting structure which permits the floor to yield and crack; improper floor composition or non-uniformity or variations in the character of the mixture used at different places throughout the floor and particularly the employment of strata of dissimilar materials having different expansion characteristics; and unequal changes of temperature at proximate places throughout the floor due to "short cut" circulation through certain pipes which are nearest to the inlets and outlets. Such cracks or fissures whether pre-arranged in the form of seams or expansion joints or subsequently developed on account of improper mounting, lack of proper reinforcing or suitable provision for expansion and contraction, inequalities of temperature distribution, non-uniformity of floor composition, or otherwise, afford avenues through which water and moisture, which is necessarily present at times on the rink floor, will penetrate into and under the floor and eventually ruin it for its intended purpose, as the water and moisture entering the cracks or seams and expansion joints, in the subsequent freezing operations not only progressively increases the separation of the cracked sections of the floor but introduces new and additional cracking and bulging strains, while the water and moisture which works its way down through the cracks and seams and under the floor, unless promptly drained away, causes bulging, swelling, rotting out of any wood that may have been used and other impairment of the floor supporting structure with a resultant disintegration of the floor.

Therefore, it is important not only to avoid seams or joints but also to construct and mount the floor with ample safeguards against all of the various stresses, strains and other conditions peculiar to these floors, which are likely to develop cracks, this being of special importance in ice rink floors which are used for other purposes in addition to skating, as for example for dancing, exhibitions, etc., as it is oftentimes necessary to remove and replace the ice quickly and at frequent intervals.

The principal objects of the invention are to provide an improved ice rink floor structure and method of making same; to construct the floor in a permanent monolithic form without seams or expansion joints; to avoid cracking of the floor and prevent penetration of water and moisture into and through the floor; to mount the floor in a floating manner so that it expands and contracts freely without binding; to incorporate reinforcing in the floor in a manner to insure rigidity and withstand the strains of expansion and contraction and maintain the entire floor in a permanent, unbroken, unitary form; to insure a permanent unyielding support for the floor and at the same time afford adequate slippage for expansion and contraction; to permit convenient and effective insulation of the floor on the underside; to provide improved connections for the headers; to arrange the connections so that they are below the desired level of the surrounding floor; to mount the floor pipes in an improved manner; to utilize the pipe mounting for reinforcing the floor; to provide an improved mounting for the railing around the floor, and in general to provide a floor structure and method of making same wherein the supporting, reinforcing, composition and unification of the floor, the provisions for expansion and contraction, and the manner of effecting changes of temperature are all correlated in a proper manner.

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THE ARCHITECT AND ENGINEER

DECEMBER 1933

...This Issue...

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Arthur Brown, Jr., Architect

Recent Work of Bliss & Fairweather
Architects

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B. G. Dahlberg

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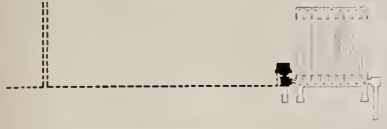

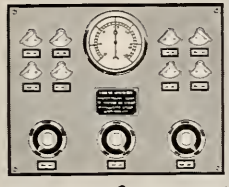

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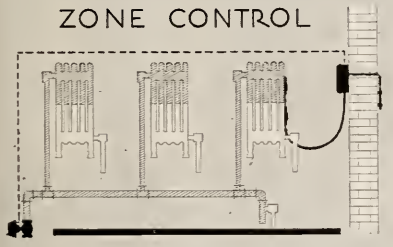

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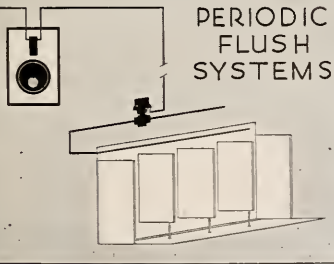

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Thumb Tacks and T-Square

AMERICA'S economic recovery is seen in a badly needed home building program, by B. G. Dahlberg whose common sense article is published in another part of this magazine. It is worth reading. It will give you who are dependent upon the building industry for your livelihood, new confidence, fresh hope, renewed optimism. Mr. Dahlberg says the country actually needs 1,350,000 family units to make up for dwellings not built in the past four years. Forty-eight billion dollars is the estimated potential building necessity now existing, he says, and this does not take into consideration the repairing or modernizing of homes that are in sore need of attention.

⁂ ⁂ ⁂

A Bay District architect has been gathering new fame abroad. B. J. S. Cahill who was at one time associated with Messrs. Wright and Rushforth in the practice of architecture in San Francisco, and who now resides in Alameda, with an office in Oakland, recently received an extended write-up in "Le Mirror du Monde," leading illustrated weekly of Paris, describing Mr. Cahill's "Butterfly Map" which eleminates the distortions apparent in the present accepted maps of the world. The article is illustrated, including a portrait of the Oakland architect.

The feature story describes his "La Carte Papillon" as the world map of the future. The endorsement of France's foremost geographer, E. de Martonne, is noted. Also the admiration of Louis Driencourt, chief hydrographic engineer of the department of the marine, and co-author of the most monumental work on map projection published.

Cahill is a Fellow of the Royal Geographical society and the Royal Meterological society. In the October Quarterly, a journal of the latter society, under the heading, "A Form of Projection Suitable for a World Weather Map" it states that:

"Cahill . . . has submitted to us proposals for standardization, by international agreement, of the base maps on which the daily synoptic (showing all countries) charts are drawn.

"He points out that at present these charts represent a variety of projections and scales, so that their combination in a world map is difficult, while the difficulties are increased by differences of symbols and hours, all of which need to be standardized.

"For the basis of the standard maps, Mr. Cahill suggests the system of projection in which the surface of the globe is represented by eight equilateral triangles (such as cutting a tennis ball into eighths and flattening it under glass in the shape of a butterfly)."

Details regarding Cahill's more accurate map also have been published in Scotland, Japan, Germany and in this country. A famous German geographer, Herr Dr. Karl-Heintz Wagner, recently sent Cahill from Barcelona, a presentation copy of his monograph on "Pseudo-cylindrical Projections", recognizing Cahill's work in that field.

England's foremost scientific weekly, "Nature," has published two articles on the butterfly map. The report of the Royal Meteorological society presented the map for consideration by weather bureaus of the world.

Major Bowie, Alameda weather service head, is in favor of using Cahill's base map for daily synoptic charts. The map has been advocated by prominent meteorlogists all over the world, in Canada, Japan, Samoa, Australia, Holland, Norway, Sweden and Denmark.

"When the world's governments have adopted this base map for daily weather records," Cahill said today, "all schools, colleges, transportation companies and other users of world maps will of necessity follow suit since they will have no logical alternative, and since an adequate world map which neither exaggerates nor distorts, is one of the crying needs of our time."

⁂ ⁂ ⁂

MUCH has been said of late about the "freedom of the press" in connection with the NRA enforcement. To refute the stories that the press is being stifled, Donald R. Richberg, general counsel for the NRA said in a recent public address in Philadelphia:

"There has not been a single action taken or contemplated by the NRA which would endanger freedom of the press. Certainly no one would contend that a code or agreement by fixing maximum hours of labor or minimum wages or by abolishing child labor, would limit the freedom of the press. Certainly no one would contend that freedom of the press depends on denying liberty of contract to employees and that the protection provided in Section 7 (a) for the exercise of the constitutional right of collective bargaining, restricts the freedom of the press. The truth is that no provision has been suggested or approved by the NRA for inclusion in a newspaper code which could have the slightest restraining effect upon editorial freedom.

"Those who argue that newspapers might be licensed under the N.I.R.A. are simply creating a hobgoblin and then screaming at it, which is not a sensible occupation for mature persons. Section 4 (b) of the N.I.R.A. does give the President power to license business enterprises in certain trades or industries under special conditions after public notice and hearing. This section was incorporated in the law because many representative business organizations insisted that there must be such a power available, even though it were never used, in order to prevent cheaters and chiselers from destroying cooperative business agreements. The proponents of the law were not enthusiastic, but dubious, of the value of the provision and the Congress expressly limited it to one year. There has been no disposition evidenced to use this licensing provision and the National Recovery Administration has consistently opposed every suggestion that it might be used. The idea that any effort would be made to apply this provision to newspapers, and to license their publication, is preposterous. In addition to all other reasons, the constitutional guarantee of the freedom of the press cannot be violated by any form of licensing; and no one would advise the President to embark on a program of such doubtful validity. Quite obviously the President himself would not give it a moment of serious consideration.

"In a word, there is not and there never will be the slightest interference with the constitutionally guaranteed freedom of the press by the National Recovery Administration. There will be no attempt to license newspapers. The raising of this issue may be profitable to a few lawyers and to those who seek some underhanded method of attacking the NRA. But otherwise the discussion is wholly unprofitable and serves merely to confuse and mislead public opinion."

⁂ ⁂ ⁂

THE Federation of Labor reported on December 1 that there had been a noticeable increase in employment in the building trades.

The Federation also reported upturns in automobile and lumber production.

"Gains in these industries are basic," it said, "for workers employed in steel, building or lumber must employ others in consumer industries to feed and clothe them. Business observers have repeatedly said recovery must start in the 'heavy' industries, and the beginning of improvement here brightens the horizon."

VOLUME 115
NUMBER 3

THE ARCHITECT AND ENGINEER

DECEMBER
1933

NRA MEMBER U.S. WE DO OUR PART

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Arthur Brown, Jr., Architect

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Photo by Moulin

COIT MEMORIAL TOWER, SAN FRANCISCO
ARTHUR BROWN, JR., ARCHITECT

THE
ARCHITECT
AND ENGINEER

DECEMBER 1933
VOLUME 115
NUMBER THREE

THE COIT MEMORIAL TOWER

by
HENRY T. HOWARD

THE erection of the Coit Memorial Tower on Telegraph Hill has aroused such a widespread expression of opinion that any description of it will be better appreciated if the various factors entering into the problem of its design are taken into consideration. Before the 'Tower' form for the memorial was decided upon many other schemes were considered. There were persons who envisaged a low horizontal mass. Others imagined a huge statue. Some suggested a single shaft, perhaps a replica of the Column of Progress at the Panama-Pacific Exposition in 1915. Many felt that regardless of its mass any monument should have a definite utilitarian function. Without going into the reasons for discarding these various suggestions, some of them necessitating a larger expenditure than was available, others impractical because of lack of space on the top of the hill, let it suffice to say that a great many ideas were discussed at length before an observation tower was finally agreed upon.

Photo by Moulin

SAN FRANCISCO SKYSCRAPERS FROM ALCOVE OF COIT TOWER

Whether, aesthetically speaking, a tower form is the best for the site is wholly a matter of taste. Analogies are countless among the mediaeval fortresses of Europe,

Painting by A. Quandt & Sons *Photo by Moulin*

COIT MEMORIAL TOWER, SAN FRANCISCO

ARTHUR BROWN, JR., ARCHITECT

many of which are perched with great effectiveness on rocks not unlike Telegraph Hill in shape and size. There is on the other hand the example, to mention only one of the Greek Parthenon, an essentially horizontal mass on its Acropolis crag at Athens. Domical structures as the crowning motive for hills are not hard to find. But here it seemed natural to rear an observation tower. Telegraph Hill has always been used as a vantage point, either for signaling or for gaining a panoramic view. Why not emphasize this idea in the form of the memorial?

Mr. Brown's problem accordingly became more than ever primarily an aesthetic one, for in a tower there would naturally be little if any space available for practical use. The expression of utilitarian functionalism therefore became negligible. The designer was concerned first of all with obtaining a mass in scale with the hill,—one stocky enough, large enough. This was complicated by the fact that the hill is not symmetrical, but longer north and south than it is in its east-west dimension. In other words, a design which looked well from the south might not look so well from the west. Moreover, it was felt that all points of view were equally important, and these varied considerably—from those on the bay looking up to those on Russian Hill where an elevational effect would be bad.

Due to the probable cost and the consequent preclusion of the use of expensive materials, it was seen that the structure would have to rely almost entirely for its effect on its mass and texture. All elaboration of detail would of necessity have to be reduced to a minimum. Simple bold forms, carefully studied in their relation to each other, the whole clothed in a uniform roughish texture, were accordingly decided upon as the means of obtaining an effect which would be at once in character with the site and of sufficient carrying power to justify the prominent setting.

Early in the process of determining the shape of the tower, it was realized that approximately the same profile should be presented in every direction. A polygonal form approaching the round, at least above the base, was therefore considered advisable. The arched loggia motive at the top was designed to provide protected observation points and at the same time a fine terminal for the shaft. At the base the entrance was logically placed at the north because the road reached the top of the hill at that side. So much for the main elements of the composition. For the detailed

Courtesy Pacific Gas & Electric Co.

NIGHT VIEW, COIT MEMORIAL TOWER, SAN FRANCISCO

treatment very little if any precedent was used. Indeed, it is doubtful if any could have been found. The tower has no prototype. It is not a mediaeval keep to resist capture, not a lighthouse to warn off mariners. Neither is it a clock tower nor a fanciful ebullition for an exposition. It is intended to be dignified without austerity; monumental without utilitarian function.

Young & Horstmeyer, Builders

COIT MEMORIAL TOWER, SAN FRANCISCO
ARTHUR BROWN, JR., ARCHITECT

PLAN, COIT TOWER, SAN FRANCISCO
Arthur Brown, Jr., Architect

The silhouette was studied most carefully. Account was taken of the forshortening from points below, particularly as one approached up the hill, as well as of the elevational effect which would be obtained from a distance. A massive base was provided to raise the shaft above the trees and to carry the eye upward. This high base is in reality an enclosed terrace protected from the wind, but affording interesting vistas out over the city and bay. In plan it recalls the round form of the shaft above but is accented at four corners to give the effect of increased rigidity. Much thought was given to the treatment of the shaft proper, a system of piers having been studied at one time. It was found that shallow flutes gave a sturdier effect and one which contrasted better with the system of arches at the top. The effect attained by the play of light and shade in these arches combined with the glimpses of the sky through the openings in the top ring is perhaps the most original element of the whole composition. By night it offers great possibilities for artificial lighting effects.

The approach up Lombard Street, then winding around the hill in a climbing spiral lands one to the north facing the entrance. A flight of steps through a forecourt, flanked by two exedrae in which it is hoped there will someday be placed fountains, leads to the front door above which is the symbol of the Phoenix rising from the flames, by Robert Howard. Within an elevator serves the lookout level at the top.

Interference with views of the memorial by future building on the hill has fortunately been safeguarded by a city ordinance. With some additional landscaping and planting the undertaking may be considered complete. The ragged, unkempt appearance of the hill will have given way to a treatment which is in keeping with the growth of the city, interpreting in fresh terms the traditional spirit of the site.

CONSTRUCTION DATA

COIT MEMORIAL TOWER

Arthur Brown, Jr., Architect
Young & Horstmeyer, Builders

175 Tons of Reinforcing Steel

5,000 Barrels of Cement

350,000 Feet of Lumber

3,200 Cubic Yards of Concrete

Otis Passenger Elevator

Electric system includes 48 floodlights for indirect lighting.

Plumbing system includes four 8'x7'x4' house tanks — Crane Co. fixtures used.

Total cost, $125,000.00

DETAIL OF MAIN FACADE, POST OFFICE BUILDING, STOCKTON, CALIFORNIA

BLISS AND FAIRWEATHER, ARCHITECTS

U. S. POST OFFICE BUILDING, STOCKTON, CALIFORNIA
Bliss and Fairweather, Architects

FEDERAL BUILDING, FACTORY AND A COUNTRY HOME

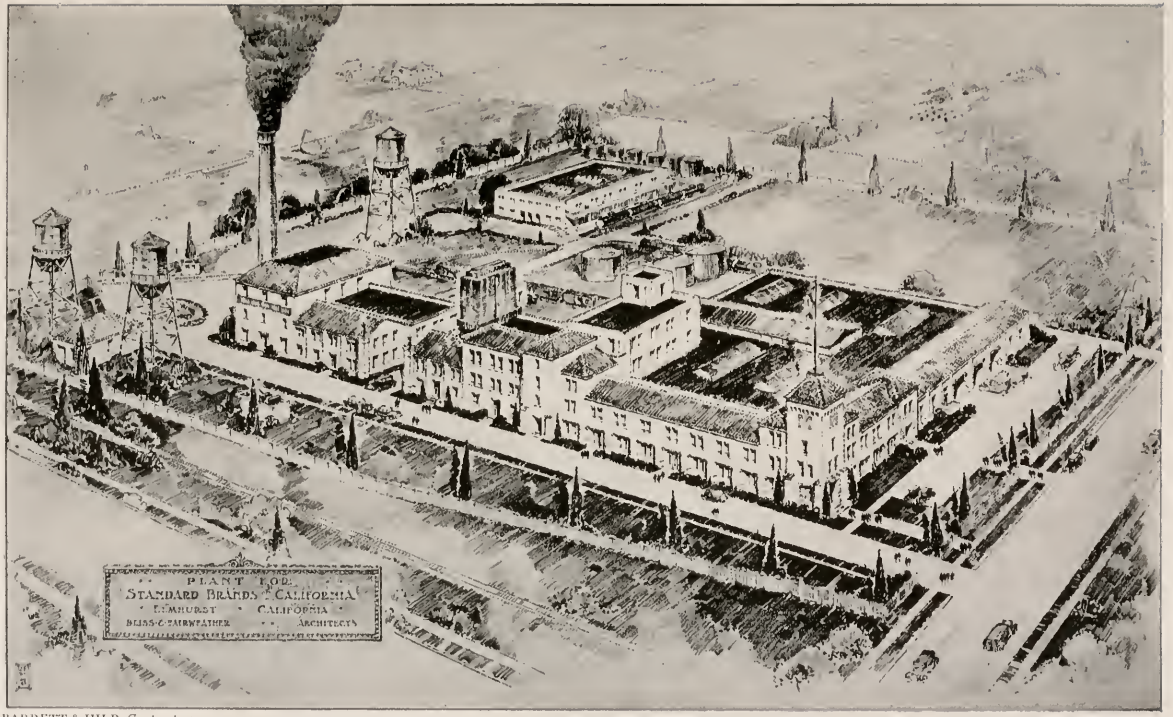
Designed by
BLISS & FAIRWEATHER
Architects

THE three buildings here illustrated represent a wide variance of usefulness — a post office at Stockton, California, a proposed manufacturing plant in Oakland, California, and a country home in the Santa Clara Valley. The architects, Messrs. Bliss and Fairweather, have handled each project in a capable manner and the completed work shows a splendid understanding of the requirements involved.

The Stockton Federal Building, recently completed, shows a well studied mass. The the detail and square columns are modern while the colonnade, with its studied spacing, reflects a distinctly classical treatment. The main facade of the building is granite; the sides are of terra cotta, with texture, color and scale so perfectly matched that it is difficult to separate the two maerials, one from the other.

ENTRANCE DETAIL, POST OFFICE BUILDING, STOCKTON, CALIFORNIA

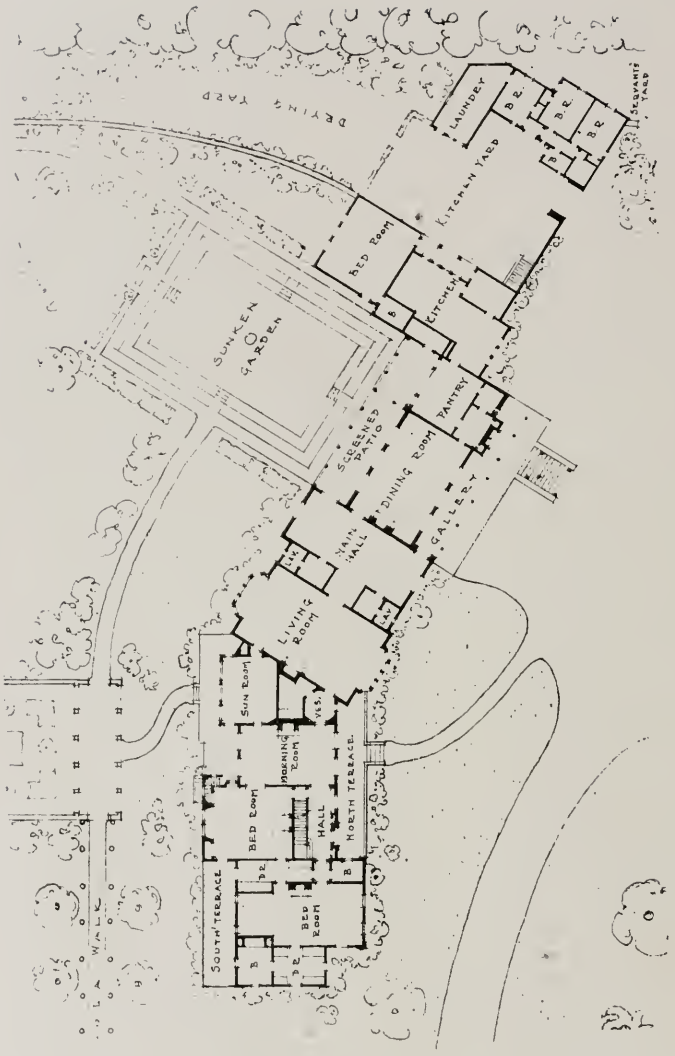
BLISS AND FAIRWEATHER, ARCHITECTS



BARRETT & HILP, *Contractors*

NEW PLANT FOR THE STANDARD BRANDS OF CALIFORNIA, ELMHURST

BLISS AND FAIRWEATHER, ARCHITECTS



PLAN, RESIDENCE FOR MRS. O. A. HALE
SARATOGA, CALIFORNIA

BLISS AND FAIRWEATHER, ARCHITECTS

FRONT ELEVATION, RESIDENCE FOR MRS. O. A. HALE, SARATOGA, CALIFORNIA

BLISS AND FAIRWEATHER, ARCHITECTS

DETAIL FROM NORTH TERRACE, RESIDENCE FOR MRS. O. A. HALE, SARATOGA, CALIFORNIA

BLISS AND FAIRWEATHER, ARCHITECTS

GARDEN ELEVATION, RESIDENCE FOR MRS. O. A. HALE, SARATOGA
Bliss and Fairweather, Architects

The interior of the Stockton building is essentially modern. A bronze and marble screen divides the main lobby from the working space. The base and trim of the entrance lobbies are finished in black and gold. The walls apart from the screen are of plaster while at each end of the lobby there is an ornamental design portraying the American eagle. All breaks and panels on the side walls are carried uninterruptedly over the ceiling, making an interesting treatment and doing away with the cornice at the intersection.

A terrazzo floor of rather intricate design, divided by brass strips, completes the main lobby. When appropriations permit it is intended to carry bands of stenciled ornament in bronze and gold on the ceiling. At the same time murals will be introduced in some of the panels. The woodwork of the upper stories is oak with terrazzo floors in the corridors.

* * *

The O. A. Hale residence in Saratoga is a very lovely place. The location is an ideal one with the Santa Cruz mountains and a wide stretch of the beautiful Santa Clara Valley as a setting. The buildings are of Majorican Spanish architecture with brick and plaster walls and handmade tile roof. Yellowish pink walls are in keeping with the style of architecture.

Because of the view possibilities special attention was given by the architects to the site. Every room has two exposures from which a different vista of the sur-

MAIN HALL, RESIDENCE FOR MRS. O. A. HALE, SARATOGA, CALIFORNIA

BLISS AND FAIRWEATHER, ARCHITECTS

GATE LODGE, RESIDENCE FOR MRS. O. A. HALE, SARATOGA
Bliss and Fairweather, Architects

rounding country may be obtained. The house has been placed with one wing north and south and another wing at an obtuse angle to take advantage of the views and to provide terraces and loggias that may be enjoyed every hour of the day.

* * *

Plans for a large manufacturing plant for the Standard Brands of California represent the last word in factory design. The early Mission style has been chosen as typical of California whose history is replete with the works of the padres. There will be white plastered walls and red tiled roofs. Sanitation and convenience of operation have been given paramount consideration.

The interior walls will be of glazed terra cotta brick and concrete, with cement floors provided with numerous drains so that they may be washed and kept in a sanitary condition with least effort. Filteration and sterilization of all water used in the plant will be provided. In fact, one of the reasons for selecting this particular site in Elmhurst, which is just outside the city of Oakland, was the excellent water supply available.

Special consideration will be given to the comfort of the five hundred or more employees of the company, such as rest rooms, cafeteria, assembly hall for instruction and recreation facilities. Railroad spur tracks will be laid so that transportation of the finished products may be handled with a minimum of effort. The cost of the plant is estimated at $500,000 and construction will go forward immediately.

GARAGE, ESTATE OF MRS. O. A. HALE,
SARATOGA, CALIFORNIA
Bliss and Fairweather, Architects

HOME BUILDING IS DOMINANT FACTOR IN U. S. RECOVERY

by
B. G. DAHLBERG

IN 1901, when the first Roosevelt entered the White House, the scandalous condition of New York City's tenements resulted in the enactment of the New Tenement Law, which set a higher standard for the construction of future dwellings of this type. In 1933, when the second Roosevelt began breakfasting at the executive mansion, 1,800,000 New York families still ate such breakfasts as hard times permitted in these same structures that begot the 1901 law. And as in 1901, families of ten or a dozen still were packed into wretched three-room apartments.

New York? We shrug our shoulders! Surely, the remainder of the country does not present such a picture. But, according to Dr. Edith E. Wood, a recognized authority on housing, less than half the homes in all the United States measure up to minimum standards of decency and health. These minimum standards do not include such frills as bathtubs, central lighting, central heating, or ice boxes. They do include running water, a water closet in the house, dry walls, garbage removal, minimum privacy at least between one family and another, sunlight, ventilation, fire protection and rental within 20 per cent of income. These minimums, so modest that they fail to provide even a modern bathtub, embrace items that one-half the people of this country are still doing without.

The Great American Riddle

Inadequate housing is part of our great American riddle. Since 1929, we have seen with growing amazement a nation overflowing with food while millions go hungry, a nation whose banks bulge with savings while it suffers from a shortage of cash, a nation overrunning with idle labor and surplus materials, but short of absolutely essential homes.

Although this problem baffles all of us, it may contain the key to its own solution. Several factors indicate that the building industry may prove to be the nation's great natural recovery accelerator.

The tenement dwellers and others of the 60 odd millions in this country who are inadequately housed have had no effect on what we call the home building industry. When we mention the overproduction of homes in 1925, we are only talking of too many homes for half the people. When we discuss the present shortage of homes, we are still only speaking of the upper half. In the lower half, there is not a mere shortage, but a complete absence of adequate dwellings.

When statisticians compute housing needs and announce that we need 1,350,000 family units to make up for dwellings not built in the past four years, they are calculating the needs of only the upper half, because this half is where the home building industry has been doing its business. It is here that the visible surpluses are accumulated. It is here that fright freezes surplus funds into inactivity, and it is here that returning confidence turns the buying curve upward. It is here that rising prices send a man pell-mell to buy a new suit and his wife to stock up on sheets and towels.

History shows us that with enough to eat and sufficient clothing to keep warm,

man's next step has always been to provide shelter for his family. If history in this respect is to be followed, and I think it is, we can assume that the surplus accumulated by the upper half of our population will be used, in large measure, to take up the housing slack before it sweeps into less fundamental fields.

Relaxing Depression's Pinch

The pinch of depression has squeezed two or more families under many roofs intended to shelter but one. As depression relaxes, the reverse process of spreading out will begin. It has been estimated that ten or eleven billion dollars is required to bring us back to the housing level of ten years ago. This is the biggest market the building industry has ever had, yet it represents only a natural, unstimulated demand for a necessity, and only among the upper layer of population.

This demand has been a long time in the making. Depression in the home building industry started after the peak year of 1925, when the most family units were built, although more money was spent on general construction in 1928. In 1929, while business in general was at its peak, home building had dropped to half its 1925 family unit level. From 1929 to the beginning of 1932, home building declined so swiftly that last year witnessed the erection of only 13 per cent of the residential floor space built in 1925. Thus, home building, having sweated off its boom-generated poisons much earlier than other industries, should be earliest in recovery, and as a matter of fact, the home building cycle apparently is already moving in advance of the general business cycle.

There is also an intangible force working within the building industry at this moment in the form of radical changes in home design and methods of construction. New styles, not modifications of the past, but arising from consideration of efficiency and economy, have appeared. Visitors to Chicago this summer inspected some new home building ideas at the Century of Progress Exposition. Many did not like them, because they were different, unconventional, "queer"—just as the Model T was queer when Henry Ford started to make motor cars for the masses while his jeering competitors looked on and continued to make cars for the thin "upper crust" of the people. If the genius and determination of a Ford had turned to building homes, if only half the progress had been made that the motor car industry has shown, the problem would be more than fifty per cent solved. Progressive builders are beginning to realize this and here and there new ideas are appearing—not merely new in "style" for a home is not like a woman's hat, to be changed with each season, but setting a new standard of value, a new idea of comfort—in other words, a new and better machine for home life, available to more people because priced within their reach.

Doubling the House Market

Low initial cost of small dwellings of improved types, combined with the economy of maintaining them should enable the building industry to tap a market it hitherto has been unable to reach. This market is among the third of the families in the United States whose annual incomes range from $2,000 down to $1,200. They are the ones we may reach with good homes costing from $3,000 to $4,000. We have never been able to supply them with good homes at such prices, but new design and construction methods may work the miracle. When that happens, the building industry will double the number of families in its market by serving, for the first time, two-thirds of our population instead of only the traditional upper third.

But under our new social and economic deal, we must not forget that third of our population which has a family income of $1,200 or less. These must have outside help. In housing this latter third, we are far behind our European contemporaries, who, since the war, have worked steadily toward eradicating the old-fashioned tenement. Like America, they found private enterprise could not do the job alone, but unlike America, they brought aid to the private endeavor and much has been accomplished.

[Turn to Page 42]

AN ALL-AMERICAN ARCHITECTURE

Story of the Mayan Civilization
Part III

by
ROBERT B. STACY-JUDD, A.I.A.

LITTLE has been said of the lost civilization of the Mayas. In fact, when first I became devoted to the subject, only a very few scientists were studying the works of this people. The result of their efforts was an excellent collection of drawings and photographs, together with learned discourses on some specific minor branch. Nevertheless these contributions, some monumental and deserving unstinted praise, were not sufficient to form a complete cohesive story.

The little available data and the present impossibility of deciphering the writing glyphs, make the task very difficult. The amazing Maya geniuses left us practically no tangible evidence of their greatness, other than an array of buildings. It is my conviction that these exquisite architectural masterpieces will contribute considerably toward the final solution. There is reason to believe the extraordinary relief carvings termed "curly-cues" by the materialists, will prove to be esoteric symbols of priceless value. It is further highly probable that a careful analysis of the general architectural features will disclose information of extreme importance. Although every movable object in the known Maya area has long centuries ago disappeared, the day may be early anticipated when quantities of books and manuscripts will be discovered. It is merely a matter of time before the writing glyphs will be deciphered. When these two disclosures are made my prediction as to the subject being the world's greatest story will, I believe, be amply verified.

THE TWICE LOST TOMB. Yucatan. Discovered by Maler who died just after its discovery, taking the secret with him. This print of the only negative (also lost) shows a temple falling off a pyramid; a volcano in eruption; a man (meaning many people) sinking while another is escaping in a boat. The above scene is the beginning of a deep bas-relief stone frieze in colors encircling the walls of a large tomb. The author believes the story tells of the sinking of the last of Atlantis and the arrival of the Maya remnant in Yucatan.

The Crime of Crimes

There are but three books, written in the Maya glyphs, known to be in existence. I regret to say none is in America.

After the so-called Spanish Conquest of Yucatan in 1542 A.D. Archbishop Landa, second bishop of Yucatan, ordered all Maya books and

DETAIL of the south wall of the north wing. Casa de las Monjas, Uxmal, Yucatan. One of the most amazing structures in the whole world. Through the opening seen to the right Mr. Stacy-Judd discovered a complete wall facing half way through the extremely thick wall. The discovery led him to add at least one thousand years to the age previously ascribed by archeologists to this structure.

manuscripts collected and taken to the Public Square at Mani where they were burned. This excess of fanatical zeal he later regretted. But his subsequent attempt to gather even a semblance of early Maya history from the few remaining Maya priests was a failure.

However, sixteen Maya priests, in secret, wrote from memory the story of their people. These books are known as the *Chilan-Balam*. In general the chronicles agree although they differ widely in detail and thereby are of limited value. Landa's act was not only an irretrievable loss. It was a world crime.

Having chosen the Maya art as conceivably possessing the most inspirational motifs for the projected style, it was necessary, for a complete understanding, to learn the history of the people. In view of conditions cited above, this became difficult to accomplish and necessitated considerable research work.

Early in the investigation it was evident that to arrive at a comprehensive knowledge of the subject meant employing, in addition to archeology, all the contributary sciences including geology, ethnology, anthropology, mythology, philology and architectural history. From a single subject the task had developed into one highly complicated and of considerable magnitude.

For the ensuing ten years odd, I managed to piece together what I believe to be the first semblance of a coherent and reasonably complete story of this remarkable people. And what a story! Far more intriguing, far greater than any previously known chronicle of human endeavor, and yet still lacking volumnes of detail.

Who Were the Mayas?

Up until the present time, investigation of the Maya civilization has mainly centered around what is known as the Maya area of Central America. This area covers Yucatan in the north to Guatemala in the south. Speculative theories as to the country of their origin range from Asia and a migration via the arctic regions of the Behring Straits to Europe via the Atlantic Ocean. One theory is that they were born, flourished and passed away in Yucatan. None of the various schools of thought however have offered sufficient evidence in support of their beliefs.

My own conclusions are that they were a people from the lost continent of Atlantis, and I feel that I can present more than sufficient evidence to support this belief. The Atlantean theory of course is not a new one, but in reference to its positive connection with the Mayas this theory has never been supported by sufficient convincing evidence. My belief is that the science of Architecture provides the necessary support.

Half a century ago, Le Plongeon, the great French savant, advanced this theory

RESIDENCE OF N. E. MONROE, SHERWOOD FOREST, CALIFORNIA

ROBT. B. STACY-JUDD, ARCHITECT

and was bitterly criticised and condemned for so doing. That he was unjustly condemned is beside the question, but it is undeniable that he contributed more toward the completion of the Maya history than any single individual. This splendid scholar wrote prolifically on numerous Maya branch subjects. His works on Maya

Motifs are combined Spanish and Mayan

RESIDENCE OF N. E. MONROE, SHERWOOD FOREST, CALIFORNIA
Robert B. Stacy-Judd, Architect

symbolism and esotheric lore are masterpieces. I admit some of his minor theories lack evidence or even logic, but what scientist is infallible? Nevertheless considering his pioneer efforts in a maze of baffling contradictions, the results are stupendous. He it was who firmly believed that the Science of Architecture held the key to solving the Maya riddle. His deductions and conclusions, together with a host of others, I have used freely, but only as and when each claim cannot be explained as "Psychic Unity" or "mere coincidence", in the words of Spindon.

The World's Greatest Story

The flood described in the Bible is legendary history in most parts of the world. The legends of the people of Europe claim that their remote ancestors CAME FROM THE WEST ACROSS WATERS. The legends of the Mayas, as well as *all* the so-called North American Indian tribes, state that their ancestors CAME FROM THE EAST, ACROSS WATERS. In these legends both hemispheres were said to have been peopled after a great flood which destroyed their country. These "word of mouth" histories agree with the Bible story.

Land east of the American continent and west of Europe obviously indicates land where now is the Atlantic Ocean. Plato's story, together with biological and geological indications agree that such land existed. The origin of domestic plants, such as cotton, banana, tobacco; Animals, such as the horse, bear, moose, wolf, etc.; relig-

ions, arts, customs, etc., help further to complete this evidence. It is interesting to learn according to Plato's story, that the same arts, sciences, religious beliefs, habits, customs and traditions prevailed among the Atlanteans as we find on both continents.

Assuming we accept Atlantis as a once existing continent, let us go a step further and vision a mighty race of people who attained a high plane of culture on its wonderfully rich lands. For many centuries they flourished. They excelled in all the arts and sciences, were a great maritime nation and extensive navigators. They remained a mighty empire until the great continent *began* to vanish beneath the waters.

Approximately twenty to twenty-five thousand years ago, nature gave vent to her pent-up forces much as she had always done and does now. Naturally, at that period, her tempermental outbursts were on a much greater scale. Within our own knowledge we realize the effect of volcanic eruption and land submergence. Krakatoa for instance. When that volcano erupted in 1883 A.D. miles of land disappeared beneath the waves. The peak, once thousands of feet above sea level, is now over 1000 ft. beneath the surface. A tidal wave, commencing one hundred feet in height was actually a menace 14,000 miles away. We have numerous records of much larger disappearances and science admits sinkings of vast magnitude in the past history of the earth.

When the continent of Atlantis began to sink, it did not go down as a body, but piece by piece. Possibly the earliest catastrophe saw fifty volcanic eruptions at one time. Whatever the preliminary causes a large area of land sank near what used to be known among the ancient races as the

Mayan motifs throughout

LIVING ROOM, RESIDENCE OF N. E. MONROE, SHERWOOD FOREST, CALIFORNIA
Robert B. Stacy-Judd, Architect

"Pillars of Hercules", or what we now know as the Gates of Gibraltar. Most of the inhabitants of this area were destroyed. The remnant, panic stricken, fled hastily to the nearest land. This land formed the shores bordering the Mediterranean Ocean. Being a great maritime race, the Atlanteans had, long prior to the catastrophe, explored the shores of the Mediterranean. The fugitives found rich soil and security in the valley of the Euphrates. Here they settled permanently, and spread over a vast area. These are the mysterious people of the Bible, unclassified by Bibliologists or Egyptologists. They were known as Akkads. It is interesting to learn that the ancient name for the Mediterranean was Akkari.

The Mother-Land

Bunsen places the arrival of the first Egyptians in Egypt at approximately 14,000 B.C. From that time until the reign of King Menes, when Egyptian history begins, nothing is known of the Egyptians. Yet that is the period roughly assigned by Egyptologists to the building of the earliest pyramids. Unquestionably these early Egyptians were a very highly cultured people. Their culture, so closely resembling that of the Mayas, is strong evidence that those early Egyptians were Akkads, and primarily from Atlantis, as were the Mayas.

If we want to continue using the name Maya, then the Atlanteans were Mayas. In fact, Atlantis, or whatever name it be given, was the Maya mother country. Logically, then the Egyptians were Maya or Atlantean colonists. Among a mass of corroborative evidence, the nine stepped pyramid of Sakarah in Egypt has identical features with the Maya pyramids in Yucatan.

Abundant evidence on this continent indicates that the Mayas in Central America arrived there at the height of their cultural expression. Considerable evidence exists to prove a positive union between the Egyptians and the Mayas in Yucatan, although the latter migration from Atlantis was not until approximately 500 B.C. Obviously therefore the culture of the Mayas in the Mother country (Atlantis) was of a very high order. It was so finished and profound, even then, that it remained fundamentally intact for thousands of years. In addition to actual duplication of customs, arts, etc., we find the same symbolism and esoteric lore practiced by the people of both Egypt and Central America. Both were colonists from Atlantis, taking their arts with them. Thus the master minds, and the root culture, of both races originated in the Maya Motherland, or Atlantis.

The Maya Tongue

As was the custom among the Egyptian high priests, the Maya Ecclesiastic leaders faithfully maintained the highest standards of all the nobler arts and sciences. Striving for the highest possible degree of learning, they eventually arrived at the status of what we might term, "mastership". With them the perpetuation of mastership was a sacred trust. Among the sciences so preserved in its classic state throughout Maya history, was their language.

The Maya tongue is a root language. There is no evidence to show that it is borrowed from any living or dead civilization. Etyomologists admit that both Hebrew and Aramaic sprang from the same root. In my opinion, the source from which both these branch languages sprang is Maya. It is the same root language which originated in Atlantis and was carried throughout the Mediterranean area and later brought to Central America. Colloquialisms crept in, but fundamentally the classic tongue remained intact. The pure language was preserved by the masters from one generation to the next. It is written that Christ, during His period of studies, sought the Masters. There is considerable evidence to show that these brilliant minds were Mayas, or descendants of the original Atlanteans, and that Christ in turn became a master of Maya learning. Classic Maya undoubtedly was used as a vehicle to transmit secret esoteric doctrines down the ages through the so called "initiates." It is an astounding fact that Christ's last words, without the elimination or change

of a single letter, were pure Mayan, with an entirely new and more logical meaning than that now given them.

Pre-Columbian Maya History

Space forbids further introduction of evidence concerning Maya history prior to their migration into Central America. Suffice it to say there is an abundance.

Summarizing probable events up to the time of the Maya colonization of Central America approximately 500 B.C. we learn:

That a great civilization existed some twenty-five thousand years ago on a continent known as Atlantis. That the waters under which that continent sank are now known as the Atlantic Ocean. That, further, it is highly probable Atlantis was once a land-bridge connecting Europe with the American continent. Evidence shows that violent eruptions and subsequent sinkings of large portions of that land-bridge took place. Europe thereby became separated from America. The intervening continent Atlantis following periodic cataclysmic spells, broke up into large island groups, immense areas sinking rapidly. After each major sinking, escaping hordes of humanity sought safety elsewhere. The first portions to sink were near Northwest Africa. The numerous migrations spread throughout Europe and along the Mediterranean shores. The last portion of the continent of Atlantis to sink was roughly in the area now known as the Carribean Sea. The last principal migration eastward from sinking Atlantis was approximately 9500 B.C. This migration agrees with the Bible story of the flood and Plato's narrative. The last migration, which probably tallied with the end of Atlantis as a continent, took place approximately 500 B.C. This event chronicles the last of the Atlanteans as such and the beginning of Maya civilization in Central America. They arrived hurriedly on these lonely and inhospitable shores. They came with few tools, possibly with possessions of little value. As a race they evidently were on a decline at the time of their arrival. In other words everything points to the fact that what I term the *first historical civilization*, started with a people who occupied lost Atlantis. They it was who developed most of our fundamental foods, founded the basic principles of a language and left us a stupendous heritage in the arts and sciences.

It is worthy of note that, no matter where found, or under what name, the Maya civilization is recognizable as synonymous with Power, Wisdom and Learning.

It is hoped that the above historical resume will account for the presence of so-called foreign influence in Maya culture in Central America.

The Mayas in Yucatan

Having covered the early activities of the much harrassed Atlanteans up to 500 B.C. we will now trace briefly, for the first time, the history of these extraordinary people after their arrival in Yucatan.

Here again much confusion exists as to what kind of people they were and what their civilization represented. Some writers refer to the Mayas as "barbarians" who *"in several respects seem to be on the very threshold of civilization."* Or again they are referred to as degenerates and drunkards.

Let us review some facts.

In the "Manuscrito de Chumayel", one of the books of the Chilan-balam, which T. A. Willard (whom I thank for the information) had translated by a scholarly Maya in Yucatan, we read that *"the First People came across water, From the East in boats."* They were known as "Ah-Canule", meaning "People of the Serpent". They first located on the Island of Cozumel, which they named. As their population increased they went to the main land of Yucatan and spread out in a great circle. In all, they built about 150 known cities.

The Itzaes, the name given to the followers of the Maya leader Itzamna, arrived in Yucatan at a later date than the Ah-Canule. They also *"came from the East"*. Itzamna was a brilliant man. He founded a renaissance of Maya culture. In approximately the year 179 A.D. the four Tutul-Xius, (pronounced Shoos) left their mys-

terious homeland known as Nonualco, south of Yucatan, and journeyed north and east. They visited a number of flourishing cities in Yucatan. Years later the tribal descendants of Xius took possession of Chichen-Itza. They found the inhabitants *"peace-loving, simple people"*. Chichen-Itza was deserted in 672 A.D. and again occupied in 987 A.D. In 1007 A.D. Kulkulcan or Quetzalcoatl as he was known in Mexico, arrived in Yucatan. This rumored white-skinned, red-bearded, blue-eyed genius, foreign to both countries, rebuilt numerous old Maya cities. He is further credited with at least helping to form the "Federation of States", or the League of Mayapan, uniting all the principal cities.

Up until this time the Mayas were worshippers of one God—Hunab-Ku; *believed in the immortality of the soul* and *placed flowers and fruit on their altars*. Kukulcan, although very good in many ways, introduced a considerable number of the Aztec abominations, including human sacrifice.

Under his ambitious guidance peace was maintained for a number of years. He returned to Mexico. Approximately 200 years later, in the year 1204 A.D., a love affair wrecked the remnant of the Maya nation. The quarrel occurred over the young bride of Cocome, ruler of Mayapan. The King of Chichen-Itza, Chac-Xib-Chac, gathered his warriors and hastened to Mayapan where he stole Cocome's bride on the night of the marriage ceremony. In revenge, King Cocome called in the aid of the Toltecs from the valley of Mexico and defeated his enemy. For their valuable help King Cocome gave the Toltecs some authority over the people of Chichen-Itza. Later the Toltec ingenuity stamped its mark on the architecture of the Mayas. Later still the Toltecs became arrogant and oppressive, which brought on a crisis.

Sic Transit Gloria Mundi

The end was tragic, sudden, sweeping, complete. The Mayan nobility banded together and utterly destroyed Mayapan. Thus sounded the death knell of the Mayan civilization. Famine and pestilence befell them in the coming of the Spaniards. One disaster followed another like repeated blows from a battering ram. Weakened and beaten by successive attacks they fell easy victims to the conquerors. No more harrowing story is chronicled in the annals of human activities than the persecution and destruction of the great race:—a race supreme as artists, the personification of gentleness and love, possessing an innate horror of warfare or strife.

Posthumous Recognition

The world at large owes a deep debt of gratitude to the Mayas. Not only were they great architects, but master craftsmen and scientists. They established a calendar so accurate that although it has been in operation for approximately 5000 years it will outlast our own Gregorian Calendar which is not yet 350 years old. They gave us the Zero sign, without which we could not compute. They left to posterity such priceless gifts as maize, potatoes, sweet potatoes, tomatoes, pumpkins, squashes, lima beans, pineapples, strawberries, quinine, cocaine, turkey, cochineal, etc., and where would we be today without their gift of rubber, not to mention tobacco?

The story of the vanished Maya race has no equal in history. Even the chronicles of their activities in Central America present an astonishing record. Moreover, all available knowledge at present has barely lifted a corner of the veil of mystery which conceals this vital subject.

As new data discloses more concrete expressions of their civilization on this continent, we may begin to appreciate our debt to these *first cultured Americans*.

REMINISCENT OF SAN FRANCISCO FIRE DAYS

by
EDWIN BRADLEY MEAD

THE scene was laid in an architect's office on Beacon Street, Boston, Massachusetts. The date was April 18, 1906. The writer was working on the drawings for a Pennsylvania Railroad office building in Baltimore. Noon came and after luncheon a stroll along newspaper row found large bulletins telling of a great earthquake in San Francisco and of the outbreak of a devastating fire. Later reports indicated that the city was doomed, that many people were killed, that the army was making a determined stand with dynamite at the strategically wide Van Ness Avenue. One report had the Cliff House tumbling into the sea. There was great interest taken in the catastrophe and everyone seemed anxious to obtain authentic information.

The State of Massachusetts appropriated a considerable sum of money for use in assisting San Francisco, this sum was known as the "San Francisco Relief Fund", and a representative was sent west to administer it.

Then a curious thing occurred and to this day there seems no definite explanation. The mayors of several eastern cities received telegrams from the city government of San Francisco inquiring as to how many architectural and engineering draughtsmen could be sent to San Francisco to assist in making plans for the rebuilding of the city. The mayor of Boston immediately consulted with some of the leading architects and as a result a front page advertisement appeared in the papers stating that all draughtsmen wishing to be sent to San Francisco should appear next morning at the office of the Board of Education.

The writer's wife urged him to ascertain the details of the proposal. An uncle whose advice was greatly valued, expressed the belief that it was an opportunity not to be overlooked. His employer indicated that he was a satisfactory cog in the office machinery but did not offer a partnership. And so your correspondent went to the appointed place that April morning.

Many more than a hundred architects and engineers were waiting—young men and middle aged men. All was excitement and wonderment. In the directors' room of the Board of Education sat Mr. Robert S. Peabody, Mr. R. Clipston Sturgis and Mr. Clarence Blackall, three of the leading architects of Boston in 1906. One by one we were sent rapidly into that room, entering by one door and leaving by another. A stenographer took records of all. As the writer entered the room he was recognized by two of the architects one of whom said "We must send Mr. Mead," and the other said, "Yes, indeed." I asked for details of the plan and was told to be at the South Station to take a train at two o'clock that very afternoon! It was proposed that they would be provided a ticket to San Francisco, a salary for one month in advance, and an adequate sum for expenses, including Pullman reservations, meals and incidentals. A return ticket to Boston would be supplied at the end of one month if desired and no questions asked. Nothing could be lost by the venture except possibly the position which one left. A group of seventeen men was selected by the architects for the journey across the country.

The clock was hurrying on; two o'clock was not far away. There was feverish excitement. I telephoned to my wife who urged me to go. I hastened to my suburban

home, packed rapidly, kissed my sleeping baby daughter, hurried to the station with my wife, and was whisked away into the South Station. There at the track where the two o'clock train already stood was a throng of people much excited. Wives, parents and sweethearts had come to bid farewell to the little band starting forth to assist in rebuilding the City by the Golden Gate. The mayor of the city and other officials were there, including the military aide of the governor. The mayor held a reception for the seventeen adventurers and as he shook the hand of each he said: "Mr. So-and-So I wish you success and hope that you will be a credit to the Commonwealth of Massachusetts." And then the train started and the last we saw was the silk hat of the mayor and a sea of handkerchiefs waving farewell.

The military aide of the governor in uniform rode with us as far as Worcester, a distance of some forty miles. He established himself in a drawing room and there each one of us went in turn to receive our tickets, salary and incidental expense money, giving in return the proper receipts.

The trip had a certain glamor of adventure and was an exciting experience for all of us. Probably none had ever been west of Chicago before and many had not wandered that far from the Hub of the Universe. San Francisco seemed as far away as China. On the second day a meeting of the group was held, an organization formed and officers elected. Sometime later a telegram was sent to Mayor Schmitz of San Francisco giving him the glad tidings of our coming and the time of our arrival. In those harried days it is questionable if he ever saw that telegram.

Across the plains and over the mountains and down into the fertile valley of California we came, and finally rolled into the old Sixteenth Street Station in Oakland. We expected that someone would meet our group of architects sent for the salvation of the stricken city. Possibly some of us may have thought a brass band would be in attendance. We detrained and looked about us with keen expectation. All was quiet, no one seemed to notice us, no one was there to greet us. We doubtless presented a curious appearance; seventeen young men more than three thousand miles from home in an earthquake region. Somehow we reached downtown Oakland, only to learn that people were leaving San Francisco rather than going there, and that Oakland was becoming badly congested. We sent our representative to see Mayor Mott of Oakland, who most graciously interested himself in our helpless group and made arrangements for us to stay temporarily at the Hotel Athens, in very congested quarters.

Next morning the seventeen started forth to conquer San Francisco. Ten days earlier the city was standing. Now it presented a scene of desolation covered with a cloud of mortar dust with here and there a wisp of smoke still rising from the debris. We were on our way to find Mayor Schmitz who was a very busy man. Finally after much effort and traveling about, our representatives found him and explained that we had arrived. He was amazed! He had never heard of us, had never heard of telegrams being sent to mayors of eastern cities, did not know what he could do for us. Gloom, deep gloom, descended upon us. Had we traveled more than three thousand miles on a journey of mercy all for naught?

When we were back in our Oakland hotel many sat dejected in the lobby, legs extended, chins on chests. In the morning several found the representative of the Massachusetts Relief Fund and applied for return tickets to Boston. They were politely told that the understanding had been that none could be had until the expiration of thirty days. Deeper and deeper gloom descended on many.

It was decided that we must next make ourselves known to the architects of San Francisco and they took a real interest in our predicament. I shall never forget the fine courtesy shown us by the late William Curlett who had us for tea at his home and invited several architects to meet us. Later Clinton Day asked us to his home in Berkeley and with his family was most gracious.

We then sallied forth separately on little excursions of discovery. I inquired as to which architect was long established in Oakland and as a result called upon

Walter Matthews, a fine gentleman of the old school, who told me how many hundred feet of frontage he had built in Oakland, and that his father had also been an architect. To him I explained the whole situation and asked his advice as to whether I should remain or return to Boston. He was quite certain that I should remain, that soon there would be much building, much to do, a future. And so I stayed. Very soon I obtained a position with another architect in Oakland at double the Boston salary, found a friend or two in Berkeley, and with two other congenial members of the group established myself near the campus of the University. Later my wife and little girl came out and we established our home in Berkeley, where we have lived happily.

Some of the group returned to Boston as soon as they could obtain their return tickets, some went elsewhere, and today I believe that only two besides myself are still in the bay region, both architects in San Francisco, one Henry A. Minton, the other Joseph J. Rankin.

* * *

We three who remained have never regretted that unusual expedition across the continent, we have learned to be Californians, and all we wish for now is that this depression may roll away and give an opportunity once again for an architect to earn his living. That day will come, the dust will be removed from tables and tee squares, pencils will be sharpened, and the plans of the better days will happily begin.

Courtesy Camera Craft

AN ENTRANCE DETAIL

MODERN WOMAN GIVES US A PROBLEM

by
L. H. PRICE

THERE was a time when smoking by the fair sex was considered a breach of social etiquette and such smoking as was done by them was in the privacy of their boudoirs. In those days Mr. Cutler, inventor of the well known mail chute which bears his name, could rest easily at his Rochester factory, feeling that his mail chute equipment, installed in many skyscrapers throughout the country, was functioning as he had planned it.

Thanks to the inspired advertising of the tobacco manufacturers, however, and the readiness with which the fair sex have taken to the weed, there developed a period of uneasiness for Mr. Cutler. It seems that the women while they indulge in smoking, still maintain their age-old objection to cigarette butts and ashes on the floor. Consequently when our dashing young stenographer comes to the end of a fag in the corridor of an office building, she is just as likely as not to proceed to the nearest mail chute and drop the butt in the letter slot out of sight, and where it won't dirty the floor. Of course it doesn't matter that this same butt may start a fire in the mail box and burn up valuable mail, as happened at Four-Fifty Sutter Street in San Francisco not long ago. In this particular case the mail box, having been locked by Uncle Sam, was nearly ruined by the fire department in breaking it open.

In the short space of two months the Russ Building in San Francisco had three such fires, necessitating new cushions in the mail boxes and damaging mail in each case. In New York there were 72 mail chute fires in 1930 and 95 in 1931.

The nuisance became so serious that everyone concerned started thinking of the problem, with the result that the Post Office Department established a new regulation requiring mail chute cushions to be covered with asbestos. Mr. Cutler was able to get a little closer to the root of the trouble by producing a mailing pocket which will receive mail, but when someone puts a cigarette butt into it, or any other article not just about the size and shape of an envelope, it will simply fall out on the floor.

Although the Empire State Building incorporated every modern and advanced idea in building construction when it was erected a short time ago, the mailing equipment has already become antiquated as the mailing pockets do not have this rejector device. The new Rockefeller Center Buildings are happily provided with this modern device.

Some people, noting the speed with which mail drops in buildings of ordinary height, wonder whether the speed of descent in the taller skyscrapers may not in itself cause sufficient friction to start combustion. As a matter of fact, this might be a problem except that Mr. Cutler utilizes a system of up draughts in his chutes which slow up the descending mail sufficiently to render inactive Newton's law of gravitation, and reduces the velocity of fall to reasonable proportions.

Take the case of the Empire State Building for example. When an envelope containing two sheets of paper is dropped from the 80th floor it travels at practically a uniform rate of 21 miles per hour and reaches the mail box in approximately 45 seconds. Of course heavier envelopes travel faster.

At the bottom of the chute in these buildings the letters strike a smooth curved bronze plate which slows them down greatly and deflects them against a vertically hung leather cushion. They drop gently from this into the mail box proper, unharmed.

THE YOUNG ARCHITECT MUST BE VERSATILE

by

L. ANDREW REINHARD

SO varied are the problems involved in the planning and execution of a great group of modern business structures, such as Rockefeller Center, that their solution to produce a coherent result can come only by coordinating the best efforts of groups of men who have had long experience in specialized fields.

The demands of civilization and the advance of the applied sciences have brought about a degree of specialization that makes it impossible for any man to cope with all the problems that are involved in a modern building project. It is therefore necessary to call in the services of experts in many lines.

In order that harmony of effort may prevail among all these groups it is obvious that each man must approach his task with the broadest vision, with a keen desire to realize the problems of the other fellow, and with the strongest wish to cooperate to produce a unified result.

But, at the same time, there must be among these men at least one mind equal to bringing this coordination to a successful conclusion.

The young architect who has familiarized himself to a considerable extent with the problems of the financier or groups of financiers who are supplying the funds for construction, who had studied the various legal aspects of the problem involved in the construction job under consideration, who has studied the problem from a rental viewpoint, who has given attention to the viewpoints of the builders and material men, will be in a better position to sway the groups with whom he is brought into contact in conferences, than the young architect who has concerned himself with merely designs and drawings.

A great change is coming about in modern construction and I believe it is a change for the better. Today our young architects must be something of a sculptor, something of a financier, something of a real estate man, something of an engineer, just to mention a few of the viewpoints from which he should approach his problem on the basis of previous study. The influential young architect of the future will be the man who is able to coordinate the best efforts of many men of experience and imagination to produce a single unified result.

Necessarily in a great composite building enterprise there must be a yielding of viewpoints and a desire to solve the problems on the basis of the best judgments of each of the groups concerned. But this does not mean that the new solutions will not be much better than the plan originally proposed.

The architect, the builder, the financier, the building manager, the lawyer, the real estate man, the owner, the insurance man, the artist, the craftsman, the heating expert, the lighting expert, all will undoubtedly approach their problems from a different viewpoint. How to coordinate all of these viewpoints, choosing the best course to produce a balance between the financial and functional, and the aesthetic aspect of the enterprise is the greatest problem of modern building. This problem is sure to become more and more important as construction becomes more and more complex in keeping pace with the demands of modern civilization.

Modern building is fast reaching a stage of composite effort. The variety of talent

EDITOR'S NOTE—The author is a member of the firm of Reinhard & Hofmeister, Associate Architects of the Rockefeller Center, New York.

and experience needed, of materials used, and of functioning achieved in the structure are constantly being expanded.

Today we may compare the work of those engaged upon a great modern structure with work of the guilds of master builders of the middle ages. Only today the task is infinitely more complex.

The coordination of the efforts of many to produce a single unified result does not necessarily mean that the vision or imagination of any man will he hampered.

In fact, the modern guildman working in a great enterprise may call upon his imagination to the fullest extent and he may find that the cooperation and constructive criticism of his co-workers who are approaching the same problem from another angle of thought, not only helps to stimulate his own work but brings it more closely in harmony with the general purpose of the enterprise.

After all, in modern building there must be harmony of thought and harmony of effort. To correlate and coordinate the activity of the men of imagination, foresight and experience in various fields, to form groups of men who are occupied on varied phases of the work, and to arrange for the effective cooperation between groups, is in itself a task of no mean order.

Architects today must be willing to cooperate, to see the problem as a whole and not from one narrow side and to have a wholesome respect for the views of others who are giving their experience and their imagination to the success of the undertaking.

In the development of Rockefeller Center Project, for example, the conference method has been carried on throughout to bring unity into the problem.

Sculptors, painters, and decorators have contributed to the decorative scheme but though their work is varied, it attains unity through a central interpretative idea.

The coordinated efforts of groups of able men are bound to produce an infinitely more satisfactory work, financially, functionally and aesthetically than can be produced by any single man. More and more as building construction goes on we will see this coordinated effort brought to bear to stimulate the imaginations of all those participating in the design and execution of an enterprise and to produce a more profitable and satisfactory final result.

HOME BUILDING WILL AID U. S. RECOVERY

[Concluded from Page 28]

Now, however, the government seems on the verge of taking over this problem. It is well that this be done, as there is no enterprise more valuable to the nation than providing proper dwellings for its citizens. And economically, such expenditures will stimulate the flow of capital goods as much as the construction of bridges, postoffices, hospitals and schools.

To round out the picture of the home building industry today, let us consider some further estimates.

To bring back housing to the proper basis for the first one-third of the population will require substantially eleven billions; to provide housing for the second one-third will require twenty-five billion dollars, and to provide adequate housing for the last one-third will require twelve billion dollars, or a total potential building necessity now existing of forty-eight billion dollars. This does not take into consideration the repairing or modernizing of homes in the first third that will be required in the next few years by reason of such improvements as air conditioning and adequate insulation.

Nation's Biggest Payroll

In view of our present production, it does not seem to be necessary for the nation to raise any more foodstuffs or manufacture any more clothing, but the nation does face the necessity of spending over forty billion dollars for needed housing. Here, then, would seem to be the factor that would make the building industry the great recovery agent, and it is exceedingly likely that America will see, and see shortly, a home building era that will dwarf even the much talked of three billion dollar payroll in 1925, the largest wage bill ever paid by any industry.

Engineering
and
Building Construction

LOADING large casing bombs with 60 per cent dynamite. The bombs are 8″ in diameter and 22′ long. They hold from 100 to 350 pounds of dynamite.

Featuring Rock Excavation of the San Francisco Pier, Golden Gate Bridge

ROCK EXCAVATION FOR SAN FRANCISCO PIER, GOLDEN GATE BRIDGE

by
A. E GRAHAM

THE site of the San Francisco pier of the Golden Gate Bridge is a rock ledge, 1125 feet off shore, the depth of water varying from 52 to 87 feet below mean lower low water. The excavation is in the shape of a rectangle, 130 by 190 feet, with splayed corners, and the total yardage in the vertical prism down to elevation—95 is 28,600.

The water at the site is exceedingly rough, and the ebb tide has occasional velocities as high as 6 knots. Any attempt to loosen this rock by drilling and blasting would have necessitated a separate drilling frame for each drill resting on the ground to prevent breakage of tools by pitching of the drill barge. The holes obtained would be small and difficult to load and much more mechanism would have been necessary than in the method adopted, also much more time would have been consumed in drilling. To obviate these difficulties and effect the saving of time so necessary at this pier site, a method of preparing blast holes by bombing, as patented by Frank W. Camp of San Francisco, was adopted.

Unique Method of Blasting

This method consists in mounting small bombs, composed of 2″ pipe, 30 inches long, loaded with 3 pounds of 60% dynamite in a chuck at the end of a steel spud

8″ in diameter by 30′ long and weighing about 5100 pounds. The spud was dropped vertically in its intended position from the end of a derrick boom, and the force of the impact would drive the small bomb a short distance into the rock formation. The bombs were shod with cast or forged points to facilitate this penetration. The bombs were provided with automatic detonators timed to explode one minute and twenty seconds after lighting the fuse just before dropping the spud. The explosion thus took place after the bomb had been driven into the rock formation, and the time interval was determined by experiment to obtain the most effective results. The effect of the explosion was to spring a hole about 18 inches in diameter and 1½ or 2 feet deep in the rock, and this hole could be deepened by successive impacts of the spud with additional bombs. About twelve small bombs were necessary on the average to make a blast hole 20 feet deep. The upper 9 inches of the bomb were filled with 1 to 3 cement mortar.

After the completion of a blast hole, large bombs made of 8 inch pipe and loaded with 100 to 350 pounds of 60% dynamite, were driven into the holes. These bombs had points formed by cutting the sides of the pipe into four gores, bending the gores and welding them together into a point about six inches long. The cartridges of dynamite were packed in and the voids between them filled with dry cement, about one sack being required per bomb. On top of this 18 inches of concrete of about 1:3:3 proportions was placed for tamping the charge. The size of the charge was determined by the blasting effect desired, the small bombs being used near the slopes and bottom of the excavations and the large bombs in the body of the excavation. The pipes were made 22′ long for a blast hole 20′ deep. The pipes were driven into the holes with a cable tool follower 9 inches in diameter and weighing 2½ tons. This had a square shoulder for driving on the end of the pipe and a sharp pilot point for entering the pipe. Within each pipe the

Photo by McCallum Air Service and S. C. Long Productions

AERIAL VIEW AT 1000 FEET ELEVATION, SHOWING ACCESS TRESTLE TO SOUTH PIER SITE ON SAN FRANCISCO SIDE, GOLDEN GATE BRIDGE. About 800 feet of this trestle was swept away by heavy seas Dec. 13.

blasting wire connecting with the charge was coiled and after driving the pipe, a diver brought the end of this wire to the deck of the barge where it was connected to a battery.

Blasting Tube

To insure the dropping of the successive pilot bombs in a true vertical position in the deep water at the site, also to guide the large bomb into the hole, and serve as a guide for the cable driving tool, a blasting tube of 14 inch O. D. casing ½" thick was made. This tube was 120' long and to prevent damage to the tube by the pilot bomb explosions, the foot of the tube was raised about four feet above the ground by a pair of steel legs made of 12"x10" —H— beams and spanning about 8 feet. This entire tube and the supporting legs was of welded construction made at the site, and much experimenting was done before the most suitable proportions were found. The heavy casing proved necessary to furnish the required strength to the long slender tube against lateral bending due to the pressure of the currents.

All blasting operations were conducted from the deck of the derrick barge Ajax. The Ajax was held in position by three bow anchor lines and three astern, each composed of 1¼" cable with 2" anchor chain at the lower ends where the anchors were liable to drag among the rocks. Each anchor line was about 800 feet long. To prevent breakage of anchor lines due to the pitching of the Ajax in the rough water at the site, the bow anchors were attached to towing engines aboard the Ajax. The blasting tube was held in position on the bow of the Ajax while its feet stood on the bottom. A portable scaffold tower on the Ajax bow furnished access to the part in the blasting tube where the bombs in the spud were ignited before dropping to the bottom. The facility with which all blasting operations were carried out with this equipment amply justify the selection of this method in preference to drilling.

Several large bombs were fired together. At such times the blasting tube was hoisted up completely by the Ajax and the Ajax was shifted several hundred feet toward the East. Apparently the sea gulls knew what was coming as they were always right there to pick up the stunned fish.

Excavating in Deep Water

The excavation of the material was done by the Ajax with a 4½ yard clam shell bucket with Williams mechanism, the bowl and teeth having been built in accordance with a design by the Pacific Bridge Company. It was found there was much breakage of teeth, and a standby bucket was necessary while the other bucket was undergoing repairs. Both buckets gave very excellent service. The muck from the excavation was deposited in a 500 yard dump barge and towed out to deep water where it was dumped. It would of course be impossible to tie the dump barge directly up against the hull of the Ajax in this rough water and separate anchor lines, therefore.

CLAM SHELL BUCKET USED TO REMOVE ROCK BLASTED 100 FEET BENEATH THE WATER

PICTURE SHOWS METHOD OF PLACING PILOT BOMB IN CHUCK AT END OF STEEL SPUD

had to be provided for it with power on the dump barge for operating them.

A word should be said about the difficulties of making such an excavation in such strong tidal currents in water 100 feet deep. Successful digging of rock with a clam shell bucket demands that the operator see what he is digging and be able to place his bucket so that it will bring up something. Here he not only cannot see his bucket, but the ebb tide is liable to carry it 30 feet out of position in its descent thru the water. Also in rough weather the bucket has been known to swing so violently as it emerged from the water that it was impossible to dump it over the dump barge and the loaded bucket had to be dipped below the water to damp its vibrations so that it could be dumped. Also the excess of dump barge measurements over cross sections of the hole show that very much more material was excavated than could be accounted for by swell of the rock, slopes of excavations, etc., indicating that considerable material found its way into the hole by rolling along the bottom, and other means the tidal currents have of transporting material.

On account of keeping ahead of the tidal currents, an operation of this kind cannot be carried out by small equipment at all. Heavy large capacity buckets must be used for rock excavation under water and that means that the work must be done by floating equipment, as that is the only equipment available with sufficient power to handle such buckets. On the other hand, one piece of floating equipment with its anchor lines will effectively prevent any other operations from being conducted at the site, as if these anchor lines contact any falsework or other anchor lines in their sweep due to the varying positions of the dredge, either one or the other will be destroyed, so rock excavation with a clam shell bucket is at best a slow tedious operation, with the added dissatisfaction that the work is all submerged and no one can see what is being accomplished. About the only break we got on this excavation is the fact that the rock all broke up into small sizes very suitable for digging with a bucket.

Transit Control Station

The operations of blasting required a transit control station at the end of the access trestle, and an instrument man was kept there 24 hours a day. The positions of the blasting tube were located by chain and slope angle and immediately platted on a "blasting diagram" while the elevation at which the charge was placed was observed from the deck of the Ajax by sounding with the spud cable.

From our experience we think that an allowance of about three feet is necessary for blasted material below the elevation at which the charge was placed. Much wider allowances are necessary laterally. The slopes obtained are as steep as can be obtained with similar excavations conducted in the open.

Any construction man who is used to "jazzing" things up with a big power shovel on the land is apt to be quite disappointed with the long drawn out character of these operations, but aside from the question of time we think that the operations were quite successful.

THE GOLDEN GATE BRIDGE COMPARISONS

The quantity of cement used for the main piers and cable anchorages, if delivered in barrels in the old-fashioned way, and these barrels were stacked one upon another, would make a pile 110 miles high.

* * *

Concrete required for the structure would be sufficient for a sidewalk 5 feet wide from San Francisco to New York.

* * *

Each main tower is over one and one-half times the height of the Russ Building.

* * *

The roadway of the bridge is at the same height above water as the roof of a 22-story building above the sidewalk.

* * *

The bridge, loaded to capacity with as many vehicles and pedestrians as could be placed upon it, and with a wind blowing in excess of 90 miles per hour, has a factor of safety 2.6.

MORE ADVOCATES OF LONG BOND BRICK-WORK

CHARLES CRESSEY, architect of Los Angeles, whose correspondence on long bond brickwork was printed in the November ARCHITECT AND ENGINEER, has forwarded a copy of a letter received by him from Will G. Corlett of Oakland, in which Corlett states that he is in accord with Mr. Cressey's ideas on reinforced brick work. The Oakland architect goes on to say:

"The question of 'long bond' bricks that you bring up is an extremely interesting one and a subject about which very little has been said. Your observations are pertinent and the suggestion of 'long bond' bricks in the backing as far as I know is quite unique and certainly worth study. A great many points about it should be further investigated. My own observation is that the type of cement block with a wide base and long length and comparatively shallow course height made quite a good showing in Long Beach, probably for the same reason that you believe 'long bond' bricks show up better. A point for further investigation would be first the feasibility of making 'common brick' in that size from a manufacturing point of view, handling, delivery, etc., and also from the point of view of being handled with one hand by a brick mason. More information along these lines would probably promote investigation and use of this type of brick work. I agree with you and am very glad to try and stimulate interest in this and other similar questions.

"I enclose a copy of a letter which our Committee wrote to the Common Brick Manufacturers Association last August. This subject may interest you and we would welcome any comments you have along this line. It seems to us to be another point in regard to brick construction that has been overlooked. Our attitude toward brick construction, and I think that of most architects, is that wholesale condemnation of a material with the architectural and structural qualities and past record that brick work has, is wrong, and that the natural attitude of an architect is to hope to continue its use in a proper way. Of course this we believe should be the attitude towards all materials without overlooking the misuse of good materials and the danger of poor workmanship."

The letter to which Mr. Corlett alludes in his last paragraph is signed by Walter T. Steilberg, architect and engineer of Berkeley, and refers to the subject of masonry joints and the variation of lateral and compressive strength due to an increased thickness of joints. The use of ½" joints is questioned and authorities are quoted to prove in the main, a recommendation of ¼" joints plus a 1/16" tolerance, or not in excess of ⅜" thickness in any event. Thick joints were regarded as primitive or degenerate brickwork from Roman times forward, and thin joints as an indication of skilled craftsmanship. The importance of thinner joints and strong mortar for resistance to lateral forces, is stressed.

M. T. Cantell, architect and consulting engineer of Los Angeles, writes the editor his views on the subject as follows:

"The writer having spent many years in research work in the field of reinforced concrete and in brick masonry, has read, with very much interest, the articles and letters in your September, October and November issues, relating to earthquake construction and brick masonry resistance.

Mr. Cressey's suggestion of an increase in the length of a brick to twelve inches is very commendable, but to be of much value the width must also be increased to six inches, or an improvement in the bond will not be possible. With the present size, two inch lap is all that is obtainable, except in stretching bond which is of very little strength. With a 3"x6"x12" brick, three inch lap is possible.

"In addition to an improvement in the face bond, an improvement within the thickness is necessary. Here the bond should be as perfect as on the face, but whatever may be the size of brick, the interior of the wall cannot be improved with

the continued use of the common and stretching bonds. With these there is little, or no bond, vertical joints within the thickness are very numerous and are a great source of weakness. The strongest, and most perfect bonds known are true English and Flemish, in the former, vertical joints are entirely absent and almost so in Flemish.

"Regarding the thickness of joint, with the old-time lime mortar, the thinner the joint the better, but the writer, as the result of numerous tests, has found this is not the case with cement-lime mortar, a $\frac{1}{2}$ inch joint appears to develop greater strength than a $\frac{1}{4}$ or $\frac{3}{8}$ inch joint.

"In your correspondence, however, an important requirement of brickwork appears to have been overlooked, i.e., bed joint bond. In numerous earthquake damaged buildings, there appeared abundant evidence of lack of shear resistance in the bed joints. Many walls that had not collapsed were found to have separated at one or more bed joints and had come to rest with the vertical face of one portion several inches from that of the other portion. This defect was undoubtedly the cause of many buildings having collapsed. Weak mortar and poor construction have been largely commented upon as being responsible for many failures; certainly these were large contributors, but the bricks also were not free from fault.

"In addition to the improvement suggested by Mr. Cressey, each brick should be indented, similar to English and European bricks, which is well known to be for lateral strength. The indent should be on both flat sides and at least $\frac{3}{8}$ inch deep. This important feature is sadly missing here, other than the slight depression existing on one side of a few makes for the purpose of imprinting the manufacturers name.

"With good indents, the use of cement-lime mortar and damp bricks (not soaked), extremely strong lateral resistant brickwork can be constructed. Our present brick with flat, and often smooth face, offer very little shear resistance. Although good adhesion of mortar to brick is possible, it cannot be depended upon in general practice.

"There may be some difficulty in getting a larger brick adopted which numerous past experiments have shown. The use of brick as a structural material has been continuous from prehistoric times, and at fairly regular intervals attempts have been made to increase its size, but in every instance the change lasted but for a short period. A larger brick is not so easily handled, takes longer to lay, and consequently, costs considerably more in construction.

"The writer strongly supports Mr. Cressey's contention relating to reinforcement. Reinforced concrete is one material; reinforced brickwork is two materials. In the former the durability and strength depends not only upon the strength of the materials but also upon perfect adhesion of the concrete to the steel, and in the density of the concrete preventing penetration of moisture and air. Without perfect adhesion, the steel and concrete will act separately with well known disastrous results.

"The reinforcement in brickwork prevents perfect bonding of the brick, and the small amount of mortar surrounding the steel is of insufficient thickness and of too uncertain adhesion to develop bond and unite steel and brick. Furthermore, the steel cannot act as in concrete, it is too far from the face to prevent tension in the brickwork, and is too near the neutral axis to be of much value in tension. These features, together with the fact that brick is very absorbent, make it impossible to entirely prevent eventual corrosion of the steel. Galvanized steel has been suggested as being more suitable than foundry finish. With this the writer cannot agree; neither should it be painted or tarred, unless the function of adhesion is entirely neglected, for such treatments greatly reduce the adhesion, and in any case, it could not be considered as anything more than a temporary corrosion preventitive, or as adding a little longer life to the steel.

"In your November issue, Mr. Freese refers to the great expense involved in the endeavor to strengthen existing buildings to make them more quake resistant. There is much in his statements that should be given serious attention. The writer thoroughly agrees with him in the matter of foundation strengthening, a difficult but necessary operation which is no doubt receiving attention by the Engineering Board."

CERTIFICATES TO PRACTICE

At a meeting of the California State Board of Architectural Examiners, northern district, held on November 28, the following candidates were granted provisional certificates:

Jas. Anderson Jr., 23rd Ave., San Francisco.

Frederick L. Confer, 520 The Alameda, Berkeley.

CODE FOR CONSTRUCTION INDUSTRY UNDER STATE LAW

HEARINGS on the basic code for the construction industry of California filed with the Commissioner of Corporations at San Francisco were held early in November, according to Charles B. Roeth, architect, of San Francisco, president of the Construction League of California, which is sponsoring the code. The first hearing was held at San Francisco and this was followed by another in Los Angeles.

The proposed code is modelled after the national code for the industry drafted by the Construction League of the United States, now pending before the National Recovery Administration at Washington. Supplementary codes in conformity to the proposed state code are expected to be drafted by architects, engineers, general contractors, subcontractors and other groups. Relations with labor will be dealt with more fully in these codes, this subject being covered only generally in the basic code. Later when the national codes which will supersede the state codes when the former become operative, are applied very little rearrangement will be needed, the sponsors of the basic code assert.

Discussing the preparation of the basic code by the Construction League of California, which is a unit of the Construction League of the U. S., President Roeth said:

"In all discussions having to do with the plan of administration, it was the unanimous agreement that all control authorities, and regional authority committees, both in Northern and Southern California, should be representative of the territorial groups in the strictest sense, in order that the operation of administration be extended from the actual firing line in the field on up through the local or territorial authority, through the local or authority committees on and through the state authority to the national authority when such operation and direction becomes necessary.

"Recognition was given to the important fact that the various crafts or groups especially in the building section in the different parts of the state must necessarily set up the details of control in their particular territories, so that in the provisions made for the filing of supplemental codes only those mandatory provisions laid down in the National and State Acts are made active, it being the intent that the relations with labor be fully dealt with in each of such supplemental codes to be filed later. Indeed, in this basic code the matter of minimum wages, maximum hours and other rules and practices are covered only generally, it being intended that they be covered in detail in each supplemental code and no attempt is made to interfere with the privileges or prerogatives of local groups or organizations.

"That the rightful representation be had in the matter of supplemental codes, it has been provided that the major groups such as architects, engineers, general contractors, both building and engineering and major subcrafts, shall file master codes to cover the particular problems of their crafts to unify under the basic code for the purpose of administration."

The League is looking to the state regulatory departments for enforcement of the codes, according to Mr. Roeth, especially since the N.R.A. Coordinating Division has been set up in the Contractors' License Bureau. These departments have in operation the necessary machinery for enforcement of the codes and are self-supporting.

Copies of the basic code may be obtained from the N.R.A. Coordinating Division, Contractors' License Bureau, headquarters of which are in the State building annex, 450 McAllister Street, San Francisco. The text of the code as filed by the Construction League of California follows:

This Code for the Construction Industry of California in its present form merely reflects the proposal of the above mentioned Industry and none of the provisions contained herein are to be regarded as having received the approval of the State Recovery Administration as applying to this Industry.

BASIC GENERAL CODE FOR THE CONSTRUCTION INDUSTRY OF CALIFORNIA

Preamble

The Construction Industry has been in an abnormally depressed condition for the past several years and the volume of business has declined to a fraction of former levels. Unemployment has increased nt an unprecedented rate. Unfair and ruinous competitive methods have destroyed profits and so demoralized the business that wages have been driven to a point where they do not afford a decent standard of living. Capital values, cash resources and credit have been depleted to a point where it is difficult for the Architect, the Engineer, the General and Subcontractor, and Manufacturers and suppliers furnishing material entering into construction, to maintain proper standards of operation, or to secure a reasonable profit.

To relieve this situation and to effectuate the policy, or policies of Title I of the National Industrial Recovery Act and the California Industrial Recovery Acts of 1933 during the period of the existing emergency, to induce and maintain the united action of all elements of the Construction Industry under adequate governmental or private sanctions and supervision, to eliminate the unfair competitive practices complained of and to advance the public interest, to reduce and relieve unemployment, to improve standards of labor and living and otherwise to rehabilitate the Construction Industry, the following provisions are established as n Basic Code of Fair Competition for the Construction Industry of California.

ARTICLE I—DEFINITIONS

(a) The term "Construction Industry" as used herein is defined to mean the designing, the constructing, and the assembling, installing and applying of manufactured parts and products of;

(b) Building structures, including modifications thereof and fixes assessories thereto, intended for use as shelter; and

(c) Fixed structures and other fixed improvements and modifications, flood control and water power development, reclamation and other similar services required for the public welfare;

(d) And the term "Construction Industry" is defined to include all persons who perform such functions, including without limitations those persons commonly known and sometimes defined by law, as Architects, Engineers, Contractors, including "home builders" and/or "speculative builders" and subcontractors and such other divisions of the Construction Industry of the State of California as properly come under this Basic Code;

(e) The term "person" as used herein is taken to mean a natural person, corporation or agency;

(f) The term "employer" shall mean all persons who employ labor in the conduct of any branch of the Construction Industry as defined above;

(g) The term "employees" shall mean all persons in the conduct of any branch of the Construction Industry as defined above;

(h) The term "codified unit" shall mean any trade association, professional body or organized group in the Construction Industry for which a code has been approved by the Commissioner of Corporations of California and concurred in by the Director of the Department of Industrial Relations;

(i) The term "California Construction Authority" shall mean the authorized state-wide representatives of all groups in the Construction Industry;

(j) The term "Construction Authority Regional Committee" shall mean the Northern or Southern representatives, delegated to act as Regional Governing Boards and from which the "California Construction Authority" is given being.

ARTICLE II—PROVISIONS INCORPORATED FROM NATIONAL INDUSTRIAL RECOVERY ACT

(a) Employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

(b) No employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing.

(c) Employers shall comply with the maximum hours of labor, minimum rates of pay and other conditions of employment, approved or prescribed by the President.

ARTICLE III—MINIMUM WAGES

Employers in the Construction Industry shall pay wages:

(a) Common labor. Not less than 50c per hour.

(b) Clerical labor. Not less than $16 per week.

(c) Each supplemental Code filed and approved in accordance with the provisions of this Basic Code for the Construction Industry shall make adequate provision for a minimum wage in accordance with the provisions nf the State and National Recovery Acts. No wages set up in same shall be less than herein provided.

(d) Nothing herein contained shnll be construed to apply to employees whose rates of wages are established for specific projects by competent government authority in accordance with law or with rates of wages established by contracts now in force.

(e) Minimum wages for skilled mechanics in the Construction Industry shall be determined in accordance with the provisions of supplemental codes covering the various Codified Units estnblished under authority of this State Basic Code nfter code approval by the Commissioner of Corporations of Californin and concurrence of the Director of Industrial Relations.

ARTICLE IV—MAXIMUM HOURS

Employers in the Construction Industry shnll not employ nny employee:

(a) In excess of the maximum average of forty (40) hours a week during any six months calendar period, not more than eight (8) hours in any one day, excluding employees engaged in professional, executive, administrative or supervisory work and those engaged in cases of emergency work requiring the protection of life and property.

(b) Employers shnll not employ accounting, clerical or office employees in any office or in any place or manner for more than forty (40) hours in any week, excluding employees in managerial or executive capacities.

(c) Each supplemental Code filed and approved in accordance with the provisions of this Basic Code for the Construction Industry shall make adequate provision for maximum hours in accordance with the provisions of the State and National Recovery Acts. No wages set up in same shall he less than herein provided.

(d) Nothing herein contained shall be construed to apply to employees whose hours of labor are established for specific projects by competent governmental authority acting in accordance with law or with hours of work established by contracts now in force.

ARTICLE V—MINIMUM AGE

An employer in the Construction Industry shall not employ any minor under the age of sixteen (16) years or under any greater age specified by law or competent governmental authority.

ARTICLE VI—DIVISIONAL GROUPING BY PROFESSIONS AND CRAFTS

The Architects, Engineers, General Contractors, "Home builders" and/or "Speculative builder," Subcontractors and such other divisions of the Construction Industry of California as properly come under this Code of Fair Competition, shall de divided into Districts or Zones, by cities, counties or districts, as approved from time to time, by the Construction Authority Regional Committees and the California Construction Authority hereinafter provided for. It is understood that any professional or trade group wishing to operate under one state-wide code may elect so to do and such code shall be subject to approval in the same manner as above.

ARTICLE VII—ADMINISTRATION

Section 1.—California Construction Authority—(Designated as the "Construction Authority")

(a) That this Code be truly representative of the Construction Industry of California, the component groups viz., the Architects, Engineers, General Contractors, "Home Builders" or "Speculative Builders," Subcontractors and all other divisions of the Construction Industry as properly cone under this Code of Fair Competition, shall, as hereinafter prescribed, nuthorize and create the California Construction Authority as the governing board, which shall be state-wide in representation.

Section 2.—Construction Authority Regional Committee

(a) That the various districts or zones throughout the State be properly represented in the administration and coordination of this Code, there is established two Regional Committees to be known as the Construction Authority Regional Committees; one, to include 45 Northern California Counties, and one, to include the 12 Southern California Counties as follows: Mono, Inyo, Kern, Tulare, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Imperial.

(b) These Construction Authority Regional Committees shall be composed of one representative of each Codified Unit of the California Construction Industry operating under a duly approved Code of Fair Competition, in each of the above designated territories.

(c) These Construction Authority Regional Committees shall have authority to establish executive committees of 10 members each, with such delegated power as they may deem necessary. In order that such Regional Executive Committees be truly representative, the major functional divisions of the Construction Industry, as commonly recognized, shall be represented on these Regional Executive Committees by two architects, two engineers, two general contractors, and four subcontractors.

(d) From such duly created Regional Executive Committees in each of the above designated territories there shall be chosen three members from Southern California which shall be known as the "California Construction Authority."

(e) Where a Construction Authority Regional Committee fails to agree on any question or issue referred to it, it may refer said question or issue to the California Construction Authority for adjudication and final decision.

ARTICLE VIII—SUPPLEMENTAL CODES

This Basic Code for the California Construction Industry shall be amplified and expended by supplemental codes known as "Codified Units" prepared and proposed by professional bodies, trade or industrial associations, within the Construction Industry of California, representative of the various functions of the Industry or sub-divisions thereof. Such supplemental codes shall be subject to the approval of the Commissioner of Corporations of California and concurred in by the Director of Industrial Relations of the State of California and shall be administered by committees therein respectively established. Such committees so established shall have the power to hear and to recommend adjustments or reconciliations of any controversy between or complaint made by any employers or associations thereof, who shall be subject to the provisions of any such supplemental code or codes.

In the event that any such adjustments or reconciliations so recommended shall not be accepted by such employers, or associations thereof, such Committees shall, at the request of any party directly concerned, refer any such controversies or complaints to the Construction Authority Regional Committees hereinabove established, for appropriate adjustments by it.

In the event that the adjustment or reconciliation recommended by the State Construction Authority Regional Committee shall not be accepted by any party to the controversy or complaint, the Construction Authority Regional Committee shall at the request of any party directly concerned, refer the matter to the California Construction Authority, who at their option, may hear and determine any such controversy or complaint.

Any adjustment or reconciliation of any such controversy or complaint determined by the California Construction Authority shall be final and shall bind the employers, or associations thereof, involved in any such controversy or initiating any such complaint.

It is the spirit of the foregoing provisions that, so far as possible, controversies or complaints arising within any of the "Codified Units" or sub-divisions of the Construction Industry of Californin covered by n supplemental code shall be fully determined and adjusted by the Committees or agencies established in the sup-

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With the Landscape Architects

PARK DEVELOPMENT PLANS

Thomas C. Vint, Chief Landscape Architect in the office of the National Park Service, Branch of Plans and Designs, San Francisco, writes of the work of this Department in "Landscape Architecture":

"Functioning not unlike a private professional office, the Branch of Plans and Design serves as professional adviser on matters of architecture and landscape architecture in the national parks, national monuments, and national military parks. The San Francisco office embraces the territory west of the Mississippi, with the exception of Hot Springs National Park, Oklahoma, which is covered, along with the Eastern and Southern territory, by the Eastern office located in Washington, D.C.

"In the San Francisco office the regular personnel is ten landscape architects, five architects, and one structural engineer. For turning out the plans and specifications for the first group of Public Works projects, the office has employed seven additional architects on a temporary basis.

"While not assuming direct charge of construction funds, the Branch is vitally concerned with all plans of park development. Its function is to formulate a practical, well considered course of development for every park and monument through the preparation of a master plan, including determination of the most appropriate type of architecture, and to outline a general plan of development for each tourist and administrative center. The problems to be solved within the planning field are the protection of the landscape, the type and location of buildings, bridges, and parking areas, and the restoration of natural features destroyed by natural or other forces. The Branch prepares the landscape and architectural plans for the government facilities that are contracted through or constructed by the park superintendent's organization. It reviews the plans submitted by the public utility operators for tourist accommodations and prepares the architectural plans and specifications for bridges, guard rails, tunnel portals, and other features constructed by the Bureau of Public Roads as a part of the major road system. Field men of the Branch inspect surveys with the Bureau of Public Roads engineers, review plans and specifications, and submit reports on the routing of proposed roads. Through special provision clauses in the contract specifications, control is exercised over the width of clearing, location, and obliteration of temporary roads incidental to construction, the selection of quarries and borrow pits, and the rounding and flattening of cut slopes along the roads.

"May to November normally constitutes the field season in the Western parks and monuments. Men are assigned to a park or several adjacent parks for the season. In this way the men, covering a definite territory, are on hand to interpret plans and make decisions, and thus the work is able to progress without the delay to building forces that would otherwise ensue. In winter, or when not required in the field, the men are recalled to the San Francisco office to assist in the preparation of plans and specifications. By this procedure the men are familiar with all features of the plan; having followed it from its inception, they are well prepared to see that the intent is carried through construction.

"The launching of the Public Works Program under the National Recovery Act throws upon the Branch responsibility for the speedy preparation of plans and specifications for employees' residences, administration buildings, utility buildings, fire look-out towers, and smaller structures such as entrance developments and comfort stations, included in the allotment of $1,250,000 for physical improvements, camp and parking areas."

COMPLETES PLANS FOR LANDSCAPING

Horace G. Cotton, landscape architect, has completed plans for garden work at the residence of W. E. Jason, Jr., 580 Hayne Road, Hillsborough. A contract has been let to the California Rustic Fence Company for its newly patented rustic fencing which is finding favor with architects and landscape architects. Other work at the Jason residence includes building driveways, rockery, wisteria arbor and shrub planting.

SUBURBAN HOUSE COMPETITION

Under the auspices of Northern California Chapter, the American Institute of Architects, the City of Paris Department Store of San Francisco is holding a competition for a suburban house.

Eight prizes of $100 each will be awarded to eight equal winners. The drawings of the eight winning competitors will be displayed. The City of Paris will make models of the winning houses, which models will be the property of the City of Paris and will also be for display purposes. A certain number of non-winners will be chosen for exhibition purposes during the display of models.

The Exhibition Committee will act as adviser for the competition, pro tem and the jury will consist of two practicing architects and a representative of the City of Paris. Frederick H. Reimers is chairman of the Exhibit Committee.

The program follows:

"On a level corner piece of property, facing east, 100 feet frontage and 160 feet depth, it is proposed to build a suburban house for a family of three, with accommodations for one servant.

"The family consists of father, mother and infant son.

"The house shall contain living room, dining room, entrance hall, library, pantry, kitchen, laundry, one servant's room with bath, three master bedrooms, each with bath, and a two car garage. The house will be heated by steam. There will be a fireplace in the living room, library and dining room. The garden and the house are to have intimate connection, therefore the entourage should be indicated, including a greenhouse and a swimming pool.

"The house may be of one or two stories and may be of any materials.

"The entrance may face either street.

"The house may be 'moderne' or any style or adaptation thereof, particularly suited to California."

Drawings must be delivered January 5. Entries closed December 5th.

GRASS VALLEY RESIDENCE

Working drawings are being prepared by Walter C. Clifford, architect, 3229 Washington Street, San Francisco, for a large Class C Tudor country residence at Grass Valley, Nevada County, for Errol MacBoyle. It is planned to start construction of this thirty room house in the spring. The architect's preliminary estimate of the cost is $150,000.

THORNTON FITZHUGH

Thornton Fitzhugh, 70, architect and engineer, died at his home, 401 N. Avenue 50, Los Angeles, December 4, of a spinal ailment.

Mr. Fitzhugh was born in Indianapolis, Ind. He moved to Los Angeles in 1896, his first important work being the designing of the Pacific Electric terminal and office building at Sixth and Main Streets. Later he went to Arizona as architect for the state penitentiary at Florence and the state hospital for insane at Tempe. Returning to Los Angeles he designed numerous buildings in and around Los Angeles, among them the Labor Temple on Maple Avenue. He was associated as engineer with Krucker & Deckbar in designing the Trinity auditorium and hotel building on South Grand Avenue. He was a member of the Los Angeles city building ordinance commission in 1906 and a member of the Santa Barbara reconstruction committee, and the Southern California Chapter of Architects.

Mr. Fitzhugh is survived by his widow, Mrs. Mable A. Fitzhugh; two sons, Lee M. Fitzhugh of Sherman Oaks and Thornton Fitzhugh, Jr., of Los Angeles and a daughter, Mrs. A. C. Bell of San Francisco; also by a brother, Lee Fitzhugh, architect of Phoenix, Ariz., and a sister, Miss Anna T. Fitzhugh.

LYMAN FARWELL

Lyman Farwell, architect, died at his home, 444 Loraine Boulevard, Los Angeles, November 4 of heart disease, aged 68. Death came unexpectedly as he had been in fairly good health. Mr. Farwell was associated in the practice of architecture for a number of years with the late O. P. Dennis under the firm name, Dennis & Farwell, but in later years practiced independently. He was the architect for the McKinley Industrial School for Boys on Woodman Avenue in San Fernando Valley and designed numerous other buildings in Los Angeles and vicinity. Mr. Farwell took an active interest in public affairs and served a term in the Assembly of the California Legislature. In more recent years he had been a member of the Los Angeles City Planning Commission.

FRED J. WESTLUND

Fred J. Westlund, contractor in Oakland for many years, was found dead beneath his car parked under a tree in a Moraga orchard, November 21. His head, covered with a blanket, was pressed close to the exhaust pipe of the car. Westlund was 52 years old.

« « « « With the Architects » » » »

POST OFFICE BUILDINGS

The Federal Government has made new allotments for small town post office buildings and architects who have been commissioned to prepare plans are expected to proceed with working drawings without any further delay. The new appropriations follow:

Lodi receives $55,000 instead of $105,000. S. Heiman, 605 Market Street, San Francisco, is the architect.

Hollister receives $45,000 instead of $85,000. G. Albert Lansburgh, 140 Montgomery Street, San Francisco, is the architect.

Redding, Shasta County, receives $79,200 instead of $150,000. Albert F. Roller, Crocker First National Bank Building, San Francisco, architect.

Santa Clara receives $40,500, instead of $85,000. Clarence R. Ward, San Francisco, architect.

Other Federal building allotments in Northern California are $51,000 for Roseville, $100,000 for San Rafael, and $66,000 for Redwood City.

RELIGIOUS EDUCATIONAL BUILDING

The Trinity Methodist Episcopal Church will erect a two story and basement Class C reinforced concrete educational building on its property at Bancroft and Dana Streets, Berkeley, from plans by George Rushforth, architect of Berkeley. There will be twenty-five classrooms. The estimated cost is $40,000. Henry Dewell is the structural engineer.

BEVERLY HILLS RESIDENCE

Plans are being completed in the office of F. Eugene Barton, Crocker Building, San Francisco, for a $30,000 Georgian style residence in Beverly Hills, Los Angeles County. Mrs. Floyd R. Bekins, sister of the architect, is the owner. The house will have twelve rooms, five baths and a three car garage. There will be pressed brick exterior.

BREWERY PLANS COMPLETED

Warren E. Murray, structural engineer, 906 Hayes Street, San Francisco, has completed drawings for a group of brewery buildings at 10th and Bryant Streets, San Francisco, for the Milwaukee Brewing Company. The investment will run $250,000.

PRIZES FOR SUMMER SKETCHING

Forty-two prizes for efforts submitted in the summer sketching competition for 1933 were recently announced by the educational committee of the Washington State Chapter, A.I.A., during an exhibition at the Seattle Art Museum. Carl F. Gould of Seattle was general chairman of the committee.

Thirty-four entrants, draftsmen, young architects and students residing in Washington, submitted 225 sketches. Special honors in various classes were given James Fitzgerald, Victor Steinbrueck, Jay Hennessy, Ralph Bishop, William Proctor, F. Norton, Harry Wolfe and J. Elshin.

SCHOOL BUILDING PROGRAM

A program for additions to the several school buildings at Piedmont, California, has been discussed by the Piedmont School District, and a bond election has been held to vote $317,000 to be supplemented with a Federal grant. John J. Donovan is acting as architectural advisor for the district.

Federal grants for school improvements are also being sought by the school authorities at Burlingame, San Mateo and Berkeley.

MARIN COUNTY RESIDENCE

W. W. Wurster, architect, 260 California Street, San Francisco, has completed plans for a rustic residence in Ross, Marin County, for O. J. Seebe. Mr. Wurster has also completed drawings for a two story residence in Santa Cruz for Dr. S. B. Randall.

STORE BUILDING

A group of eight reinforced concrete store buildings to face the State Highway, Menlo Park, has been designed by W. C. F. Gillam of Burlingame. The owner is the Maloney Estate and the estimated cost is $30,000.

LODI RESIDENCE

H. C. Baumann, architect, 251 Kearny Street, San Francisco, prepared the plans for a $15,000 Colonial residence, now under construction in Lodi, for Burton Boyce Turner, superintendent of the Roma Wine Company, Lodi.

PERSONAL

CHESTER H. TREICHEL, architect, announces the removal of his office to 696 Cleveland avenue, corner Athol avenue, Oakland.

H. J. BRUNNIER, a member of the consulting staff of the San Francisco Bay Bridge, has been honored by the bridge officials who have named the No. 5 caisson at the western end of the structure after the engineer. The caisson was formerly "launched" with appropriate ceremonies early in December.

LELAND AND HALEY, consulting engineers of San Francisco, prepared the specifications for the heating and ventilating, plumbing and electrical work, in collaboration with LINCOLN BONILLON of Seattle, for the new art museum in Seattle, illustrated in the November number of THE ARCHITECT AND ENGINEER.

GEORGE GOVE, of Heath, Gove and Bell, gave an illustrated talk on his recent professional trip to Juneau and Sitka, Alaska, before the Tacoma Society of Architects November 6. Mr. Gove also exhibited a collection of 150 hand-made Christmas cards, which are the creations of architectural draftsmen.

FREDERICK V. LOCKMAN, architect of Seattle, has a new office and studio at 403 Douglas Building. The quarters will be occupied jointly by Mr. Lockman and the firm of Becket and Wurdemann, formerly located in the Edmond Meany Hotel Building. Both Welton D. Becket and Walter Wurdemann are now in Los Angeles working as members of Plummer, Wurdemann and Becket, W. P. Story Building.

"MEDIEVAL ARCHITECTURE" was the subject of a lecture given by Carl F. Gould, Bebb and Gould, Hoge Building, Seattle, before the Pacific Northwest Academy of Arts at the Mary Ann Wells Studio, Textile Tower, Seattle.

RALPH BISHOP, of Tacoma, whose pencil sketches have appeared in this magazine from time to time, was a recent visitor in San Francisco.

HARRY H. JAMES, Seattle, has resigned as a member of the Washington State Board of Architectural Examiners after 11 years service. The two incumbent members of the board are George Gove of Tacoma, and Julius Zittel of Spokane.

HAROLD C. WHITEHOUSE has been re-elected president of the Spokane Art Association.

H. L. GOGERTY has moved his office from 221 E. Compton Boulevard, Compton, to 116 N. Santa Fe Avenue, Compton.

EDITH NORTHMAN has moved her office from 5369 Wilshire Boulevard to 3052 Pico Boulevard, Los Angeles.

COMPETITIONS FOR ROME PRIZES

The American Academy in Rome has announced its annual competitions for fellowships in architecture, landscape architecture, painting, sculpture and musical composition.

In architecture the Katherine Edwards Gordon fellowship is to be awarded, in landscape architecture the Garden Club of America fellowship, in painting the Jacob H. Lazarus fellowship and in musical composition the Walter Damrosch fellowship.

The competitions are open to unmarried men not over 30 years of age who are citizens of the United States. The stipend of each fellowship is $1250 a year with an allowance of $300 for transportation to and from Rome. Residence and studio are provided without charge at the Academy, and the total estimated value of each fellowship is about $2000 a year.

The Academy reserves the right to withhold an award in any subject in which no candidate is considered to have reached the required standard.

The term of the fellowship in each subject is two years. Fellows have opportunity for extensive travel and for making contacts with leading European artists and scholars.

The Grand Central Art Galleries of New York City will present free membership in the Galleries to the painter and sculptor who win the Rome Prize and fulfill the obligations of the fellowship.

Entries for competitions will be received until February 1st. Circulars of information and application blanks may be obtained by addressing Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York.

BERKELEY RESIDENCE

John K. Ballantine, Jr., 137 Harlan Place, San Francisco, has been commissioned to prepare plans for a $15,000 residence on the Tunnel Road, Berkeley, for Stanley V. W. Hiller, 2849 Russell Street, Berkeley. Construction probably will not go forward until spring.

ST. FRANCIS HOTEL ALTERATIONS

Extensive alterations are underway to the Garden Dining Room, St. Francis Hotel. Structural plans were prepared by W. Adrian, 417 Market Street, San Francisco. Total cost of the work is estimated at $30,000.

SCHOOL BUILDING

Harry J. Devine, architect of Sacramento, is preparing plans for a $25,000 one story frame and stucco grammar school building to be built at Portola, Plumas County, for the Grammar School District. The building will have five classrooms.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.

Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 plus cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 83.00 per M
4x12x12 in.	91.00 per M
6x12x12 in.	119.00 per M
8x12x12 in.	224.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$125.00
6x12x5½	69.00

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.

Mosaic Floors—80c per sq. ft.

Duraflex Floor—23c to 30c sq. ft.

Rubber Tile—50c per sq. ft.

Terazzo Floors—45c to 60c per sq. ft.

Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	1.10 cu yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b. Job, S. F.) $2.45 per bbl.
Cement (f.o.b. Job, Oak.) $2.45 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 22.00 per M.
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 40 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 70c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per square foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)
Common, $28.00 per M (average).
Common O.P. select, average, $34.00 per M.

1x6 No. 3—Form Lumber	$20.00 per M
1x4 No. 1 flooring VG	50.00 per M
1x4 No. 2 flooring	44.00 per M
1x4 No. 3 flooring	32.50 per M
1x6 No. 2 flooring	46.00 per M
1¼x4 and 6 No. 2 flooring	55.00 per M

Slash grain—

1x4 No. 2 flooring	$44.00 per M
1x4 No. 3 flooring	38.00 per M
No. 1 common run T. & G.	36.00 per M
Latb	5.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ .90 per bdle
Redwood, No. 2	.70 per bdle.
Red Cedar	.85 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.		
1 1-16x2¼" T & G Maple	132.00 M ft.		
⅞x3½ sq. edge Maple	140.00 M ft.		
	13-16x2¼" T&G	⅝x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.00
2 ply per 1000 ft .roll	4.25
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	10.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.25 base.
Sash weights, $45 per ton.

Millwork—
O. P. $90.00 per 1000. R. W., $96.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $6.50 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.00 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $5.00 each.
Dining room cases, $6.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $10.00 per M.
For smaller work average, $25 to $32 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work ..... 40c per yard
Cold Water Painting ..... 10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.40
2 coats, lime mortar hard finish, wood lath	.50
2 coats, hard wall plaster, wood lath	.50
3 coats, metal lath and plaster	.90
Keene cement on metal lath	1.10
Ceilings with ¾ hot roll channels metal lath	.65
Ceilings with ¾ hot roll channels metal lath plastered	1.30
Shingle partition ¾ channel lath 1 side	.60
Single partition ¾ channel lath 2 sides 2 inches thick	2.00
4-inch double partition ¾ channel latb 2 sides	1.20
4-inch double partition ¾ channel lath 2 sides plastered	2.25

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.60
3 coats Medusa finish No. 18 gauge wire mesh	2.90

Wood lath, $4.00 per 1000.

2.5-lb. metal lath (dipped)	.17
2.5-lb. metal lath (galvanized)	.20
3.4-lb. metal lath (dipped)	.22
3.4-lb. metal lath (galvanized)	.28

¾-inch hot roll channels, $72 per ton.
Finish plaster, $16.40 ton; in paper sacks,
Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.;cars,$2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $43.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $55.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $5.50 per square for 30 squares or over.
Less than 30 squares, $5.75 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$95 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $87.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts. corner, center and around sides. will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20

*Established by Special Board

CRAFT	Journeyman Mechanics
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00

CRAFT	Journeyman Mechanics
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination bas been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall ba effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

Chapter and Club Meetings

NORTHERN CALIFORNIA CHAPTER

The regular monthly meeting of Northern California Chapter, A.I.A., was held at Marquard's, San Francisco, the evening of November 28, Albert J. Evers, presiding.

The minutes of the previous meeting were approved as published.

This being a business meeting to receive the reports deferred from the annual meeting in October, the following reports of officers and committees were presented and accepted with vote of appreciation:

Secretary-Treasurer, James H. Mitchell; Education, Irving F. Morrow, Chairman; Library, Dodge A. Riedy, Chairman; Legislation, Chas. F. B. Roeth,, Chairman; Entertainment, A. Appleton, Chairman; Exhibition, Frederick H. Reimers, Chairman; Competitions and Practice, J. Stewart Fairweather, Chairman; Public Information, Wm. I. Garren, Chairman; Membership, Henry H. Gutterson, Chairman; Fine Arts, G. Frederic Ashley, Chairman; Preservation of Historic Buildings, Geo. R. Klinkhardt, Chairman; Producers' Council, Harry M. Michelsen, Delegate; S. F. Federation of Arts, Irving F. Morrow, Delegate; California Building Congress, Harris C. Allen, Delegate; California Council for Protection of Roadside Beauty, Wm. I. Garren, Delegate; Construction League of California, Chas. F. B. Roeth, Delegate.

The report of the standardization committee, E. L. Norberg, Chairman, was ordered filed and the recommendation therein relative to the "Architect Selected Technical Index and Guide" was not accepted, pending further information from and action by the board of directors of the Institute.

It was directed that the recommendation of the education committee, relative to a cataloguing of the library of the S. F. Architectural Club, be transmitted to the new library committee.

It was instructed that the verbal report of the Legislation Committee be put in writing and filed for the benefit of the succeeding committee.

As a part of the report on the California Council for the Protection of Roadside Beauty, Mr. Garren stated that the Council credits the Chapter with being of great assistance in effecting legislation to beautify the highways. It was directed that entry thereof be made in the minutes.

Following the announcement that the Chapter would join with the Producers' Council in Christmas jinks, in place of other December meetings, Mr. Roeth moved and it was ordered accordingly, that the secretary prepare a resolution of the Chapter's appreciation to the Producers' Council for the invitation.

Upon motion of Mr. Allen, it was authorized that $5.00 be sent to the Massachusetts Billboard Law Defense Committee toward defense in connection with Supreme Court test case, as indicating the Chapter's interest in the guarding of highway beauty.

Mr. Miller called attention to a civic committee, of which he is a member, whose function is to recommend the nature of a celebration to commemorate the completion of the two Bay bridges. It was the consensus of opinion that he be authorized to proffer the assistance of the architectural group to the committee in connection with its deliberations on this matter.—J.H.M.

ARCHITECT'S NRA CODE

A code of fair competition for architects drafted by the Northern Section and approved by the Southern Section with a few modifications, has been submitted to the Corporation Commissioner at San Francisco by the State Association of California Architects.

Relations with draughtsmen having become an important issue under the Recovery Act the American Institute of Architects has appointed a special committee to consider this subject in connection with the code for architects.

Robert H. Orr of Los Angeles is a member of this committee. Mr. Orr thinks that the relationship between the architect and his employee is of great concern to the Institute. "The committee," he says, "will endeavor to correlate all the activities through the country; lend sympathetic assistance to the draughtsmen, and at the same time intelligently use the A.I.A.'s influence toward the end that the draughtsmen organizations be formed on principles similar to those of the state societies and Institute, i.e.: on a professional basis."

Two rival groups have been formed by architectural and engineering draughtsmen and technical employees and are contending for recognition. These are the Architectural Guild of America, comprising architectural and engineering draughtsmen, chemists and technicians, and the Federation of Architects, Engineers and Technicians.

CODE FOR CONSTRUCTION INDUSTRY

[Concluded from Page 52]

plemental codes, and that, whenever the adjustments or reconciliations recommended by such Committees or agencies are consistent with reasonable compromise, recourse shall not be had or appeal made to the Construction Authority Regional Committees or to the California Construction Authority.

It is the intent that to the greatest possible extent these supplemental codes shall be in the form of master codes for each of the recognized functional divisions of the construction industry, with such further amplifications as may later be found necessary.

The master supplemental codes shall cover such groups as the following:

A. Architects
B. Engineers
C. General Contractors (with sub-divisions such as, General Building Contractors—Highway Contractors, etc.)
D. Major Sub-contracting Crafts
E. Material Supply Dealers and/or Manufacturers and Producers with sub-divisions as may be required and in so far as this code may be properly applicable.

ARTICLE IX ENFORCEMENT AGENCY

Under Chapter 68, Statutes of 1929, as amended, authority was given for the establishment of the Board of Architectural Examiners; under Chapter 801, Statutes of 1929, similar powers were granted the Board of Civil Engineers; under Chapter 791, Statutes of 1929, the Contractors License Act was established; under Chapter 290, Statutes of 1929, the Department of Professional and Vocational Standards was created to furnish the machinery of administration and enforcement of the above named laws. Said provisions of the Statutes of the State of California and all amendments thereto, are hereby incorporated and made part of the Basic Code for the Construction Industry of California and the Department of Professional and Vocational Standards is hereby designated by the Commissioner of Corporations of California and concurred in by the Director of the Department of Industrial Relations of the State of California, as the enforcement agency for this Code except insofar as such enforcement may be in conflict with any Federal or State law. Said enforcement duties shall be

ARTICLE X—SPECIAL PROVISIONS

(a) Constitutional Rights Preserved

Nothing herein contained shall abridge any constitutional right or rights of any Architect, Engineer, General Contractor, Home Builder, Sub-contractor, Manufacturer, Suppliers furnishing materials, or other parties coming under this Basic Code.

(b) Labor Contracts Prohibited

No licensed Architect, Engineer, General Contractor, percentage plan or guaranteed cost contractor, or licensed sub-contractor and including so-called "home builders," or "speculative builders," shall award so-called labor contracts in any department of the Construction Industry.

(c) Bid Peddling Prohibited

No Architect, Engineer, General Contractor (including "home builders" and "speculative builders") shall convey to any sub-contractor, or material vendor, any substantial information prior to the award of the particular sub-contract relating to the bid of any other sub-contractor or material vendor; nor shall he mislead or deceive any sub-contractor or material vendor as to the amounts and conditions of other bids. No sub-contractor after submitting his bid for a particular sub-contractor shall convey to any general contractor information relating to his bid prior to the award of the particular sub-contractor for the purpose of securing the work at a lower price.

All duly approved supplemental codes, shall contain provisions to enforce this rule.

(d) Validity of Code

If any provision of this code is declared invalid or unenforceable the remaining provisions shall nevertheless continue in full force and effect, the same as if they had been separately presented for approval and approved by the Commissioner of Corporations of California and concurred in by the Director of the Department of Industrial Relations.

(e) Administrative Expense

All licensed Architects, Engineers, General Contractors, including "home builders" or "speculative builders," sub-contractors and other licensed contractors, shall be subject to the terms of this code and shall bear their proportionate share of the expense incident to securing the approval and administration of this Code of Fair Competition of the Construction Industry of California.

The pro-rata share of such expense, insofar as administration of this Basic Code is concerned, shall be annually determined in advance for each calendar year or fraction thereof by the Construction Authority Regional Executive Committees as in this code established and approved by the California Construction Authority. It shall be the policy of these Committees in pro-rating such expense, however, to provide that to the greatest possible extent such cost shall be borne by each codified unit of the industry, and such codes shall so provide. Each such codified unit shall also make proper provisions, as determined by the groups sponsoring and filing each such supplementary code, for the collection and payment of such proportionate expense either through direct tax on each such group or trade association, membership or otherwise as each such codified unit may themselves determine.

ARTICLE XI—AMENDMENTS

Amendments may be submitted to the Commissioner of Corporations of California from time to time, as proposed by the California Construction Authority. It is recognized, in accordance with the State Industrial Recovery Act, that the Commissioner of Corporations of California may, from time to time, cancel or modify any rule or regulation in this Code.

Amendments to this Code may be proposed, acting through any codified unit and shall be first presented to the Construction Authority Regional Executive Committee and by that Committee after approval shall be referred to the California Construction Authority. After approval by that body it shall be submitted to the Commissioner of Corporations of California.

ARTICLE XII—EFFECTIVE DATE

This Code shall become effective on approval by the Commissioner of Corporations of California and concurrence by the Director of the Department of Industrial Relations.

DEPOT INTERIOR OF STEEL

The new railway station at Hamilton, Ontario, is attracting the attention of architects and builders in both Canada and the United States because of the successful application of steel in the interior finishings of the building. The manufacture and installation of this equipment was by the Hollow-Metal Division of the Otis-Fensom Elevator Company, Ltd., Hamilton.

The wainscot, doors and frames, counter grilles, column coverings and walls are all steel. The walls are of No. 12 gauge steel, finished in baked enamel of a deep terra cotta color. The column coverings are also of steel, finished in bright aluminum enamel. All fastenings are concealed, and where two sheets of metal join, a small sunken head moulding is used at the joint. Curved walls and trim, extremely difficult to execute in steel, have here been handled successfully. Due to the heavy gauge of the metal used, there are no rolls and buckles which were so characteristic of light gauge metal when used in large sheets.

The use of steel as a wall covering affords opportunities for an almost unlimited variety of treatments. Stenciling, transfer coloring, and etching, combined with the wide range of colored enamels are a few of the possibilities.

While the conception of steel as a wall covering is not new, the realization of the idea has long been delayed. The Hamilton station is one of the first comprehensive installations of its kind and has aroused wide interest and comment.

COIT TOWER ELECTRICAL CONTRACT

The Central Electric Company, 179 Minna Street, San Francisco, installed all the electrical equipment in the new Coit Memorial Tower on Telegraph Hill, San Francisco. The company not only wired and equipped the building for lighting the interior, but was responsible for the exterior flood lighting with sixteen 1000 watt G. E. flood lights, augmented by an additional sixteen 200 watt reflectors.

The firm's contract also included power for the elevator and electrical energy for the pumps which supply water for the big storage tanks.

The Central Electrical Company was founded in 1907. Joseph M. Carlson and David H. Carlson are the owners. Other important electrical installations by this firm include the Grace Cathedral on Nob Hill, San Francisco, the Christian Science Sanatorium in Arden Wood, and the Hotel Whitcomb.

JOHN GRACE

John Grace, pioneer contractor of San Francisco, and one of the best building appraisors on the Pacific Coast, died the latter part of November. Mr. Grace was associated with T. F. Riley in the Spreckels Building.

GENERAL VIEW OF CONCOURSE IN THE RAILWAY STATION AT HAMILTON, ONT., SHOWING USE OF STEEL FOR THE INTERIOR FINISH

GENERAL VIEW OF INFORMATION BOOTH IN THE NEW RAILWAY STATION AT HAMILTON, ONT., SHOWING USE OF STEEL FOR INTERIOR FINISH

DISCUSS ILLUMINATION

Southern California Section, the Illuminating Engineering Society, entertained members of the Los Angeles Optometrists' Association and Southern California architects, at its November meeting in Los Angeles. Dr. E. A. Hutchinson, director of the Los Angeles School of Optometry, gave an address on "Illumination and Near Vision" and Lloyd Gates of the General Electric Company talked on "Century of Progress Lighting," showing 55 colored lantern slides, illustrating the outstanding lighting effects at the Chicago fair.

Dr. Hutchinson emphasized the benefits of proper illumination to vision and exhibited a new testing instrument for illumination with a schedule showing improved vision gained by increase of direct illumination on the reading page.

In the general discussion which followed a number of architects participated, chief interest centering in the Century of Progress architecture. A. C. Zimmerman regarded it as an interesting experiment of doubtful success in advancing standards of design, and tending to prove the good qualities of traditional design.

R. M. Schindler spoke as a modernist but considered the Chicago exposition designs only as stepping stones, emphasizing the need for a clear outlook in the needs of yesterday life in terms of space and accommodation with materials and form as a secondary factor.

Charles Cressey thought Dr. Hutchinson's address gave a new lead in suggesting that general illumination is less important than individual lights particularly adapted to the personal field of vision. Commenting on the pictures shown he said the present methods of street lighting were evidently due for drastic modification. A few of the successful advances in illumination at the Chicago exposition were notable in not using direct primary colors. Disfigurement of buildings by signs, he declared, had developed into a civic disgrace.

OREGON CHAPTER

A regular meeting of the Oregon Chapter, A.I.A., to which the registered architects were invited, was held at the Chamber of Commerce, November 24, at 6:30 P. M. Following the dinner, President Crowell called the meeting to order for business.

Those present were Members and Associates: Messrs. Crowell, Bean, Church, Wallwork, Aandahl, Lawrence, Williams, Stanton, Doty, Parker, Johnston, Sundeleaf, Brookman, Belluschi, Logan, Hemenway, Whitney, Webber, Howell.

Visitors: Kroner, Tourtellette, MacPike, Philips, Bridges.

Mr. Church reported on the sketch competition which was recently exhibited at Meier & Frank's.

The president then called on City Commissioner Bean who made a very enlightening talk on the CWA. Commissioner Bean recently returned from Washington where he was given information and instructions relative to the scope and administration of the CWA in Oregon.

DECEMBER MEETING

Southern California Chapter, American Institute of Architects, held its December meeting at the University Club, Los Angeles, December 12. Chapter officers and directors for 1934 and delegates to the Institute convention were elected. The special committee appointed at the November Chapter meeting to prepare a program for competition on public buildings presented its report.

FLOYD GIBBONS IN NRA DRIVE

Floyd Gibbons, headline hunter now entering his fifth year of news reporting for radio, is broadcasting the first commercial radio program to be designed primarily to further the campaign of the NRA. With Victor Young and his orchestra supplying the musical interludes, Gibbons gives weekly talks and news notes on various aspects of the recovery drive.

The program is sponsored by the Johns-Manville Corporation and is on the air Mondays from 8:30 to 9:00 P. M. (EST).

Discussing his new "assignment," Gibbons said he felt just like a war correspondent again, this time reporting the offensive to win the war against depression.

Gibbons will give special attention to the opportunity the home owner has to assist the NRA drive by starting work on long-deferred repairs, replacements and renovation. He will point out how the building industry is the key to prosperity because of its widespread ramification and the number of men it is capable of employing.

This will lead to the announcement of a new plan whereby Johns-Manville will lend home owners funds for purposes of renovation. A million dollars has been set aside for the fund.

SPOKANE ARCHITECT BUSY

George M. Rasque's office in Spokane is one of the busiest places in Spokane. Mr. Rasque, state architect for eastern Washington, is supervising a $450,000 construction program for the Eastern State Hospital at Medical Lake, a new $50,000 hospital at Walla Walla for the state penitentiary, and a new school at Brewster.

SAFEGUARDING TENANTS AND THEIR PROPERTY

FURTHER increases in the cost of public liability and compensation insurance are certain unless the constantly rising loss ratio in office and apartment buildings can be effectively stopped. It is, of course, not surprising that the loss ratio has increased. Depression naturally tempts those in financial distress to create accident claims, and there are always doctors and lawyers who will yield to the same temptation and share in the proceeds, says a writer in *Building and Building Management*.

Neither an office building nor an apartment building is a particularly dangerous place. They are, from the standpoint of personal safety, just about as safe as any place can be. But accidents do happen and people do get hurt. The building manager's task is one of going through his building with an open mind and an honest desire to see safety conditions as they actually are. Many hazards are self-evident, others would be were the manager not so familiar with their existence, and some are more or less hidden until one really tries to find them.

Obviously, this question of safety divides into two major divisions: safety for tenants and the public, and safety for building employees. It is our purpose in this article to deal only with the highlights of safety for tenants and the public.

Starting with the outside of the building, it may be well to consider briefly some of the hazards that are more or less within the control of the building manager. First of all, there are the sidewalks. Broken sidewalks rank high among the causes of falls. The answer here is a conscientious janitor or a watchful superintendent.

Another hazard, important in many buildings of older architectural styles, is over-hanging cornices and decorations. Careful and more or less frequent inspections are essential in any building that has this danger to contend with. Common sense would seem to demand such inspections—but they are not infrequently neglected.

As a case in point, one building manager employed an independent contractor to clean his building and specified that the contractor must carry full liability and compensation protection. The scaffolding ropes pulled a section of cornice loose and it struck and seriously injured a passerby. In subsequent litigation, the contractor's liability company successfully established the defense that the building manager had failed to warn the contractor of the defective cornice and that it constituted a latent defect of which he had no knowledge. Liability was placed upon the building owner.

The building entrance also should receive consideration in safety inspections. Entrances with considerable slope in the sidewalk approach are not rare. These entrances may, under certain conditions, constitute very real hazards, particularly when they involve heavy doors and slippery footing. Revolving doors that are not properly maintained may become exceedingly dangerous, when there is any considerable amount of traffic passing through them. Bad bumps, broken eye-glasses and possibly serious injuries to aged, sick or infirm people may result. It will pay to consider the entrance doors carefully.

In the lobby, the obvious hazards are tripping and slipping. Loose or defective mats, cuspidors, sand-jars and so on constitute a decided tripping hazard and improper cleaning materials may leave slippery floors that invite falls and subsequent claims for compensation.

Another important point in eliminating slipping in lobbies is the placing of properly designed mats to catch and hold the mud during inclement weather. Dry, clean floors greatly reduce the chances of lobby falls.

Sufficient light is obviously of vital importance throughout the public areas of the building. Entirely apart from the effect of proper lighting in renting space, enough light in the right places is a fundamental step in the direction of safety.

Modern elevator equipment has eliminated most of the tripping hazards that existed in the days of dark thresholds, poor leveling at the floors and dimly lighted cabs. Recognition of slipping hazards while entering and leaving elevators has brought effective measures for providing good footing in front of elevators. But some old buildings still present many dangers, which could, in most instances, be eliminated at slight cost.

Elevator doors are one of the most conspicuous hazards in an office building. Open grille doors involve many risks that have been obviated

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in newer installations. These range from pinched fingers to fatal accidents caused by starting the car while someone is entering or leaving, or by falls against the doors while the car is in motion. Interlocks correct the starting hazard. Inner doors or collapsible gates prevent accidents while the car is moving. Training of operators eliminates most of the other troubles.

One safety device after another for elevators has been introduced until modern vertical transportation is perhaps the safest of all modes of travel. But some elevators in old buildings, both office and apartment, are far from safe and their owners may be assuming moral and financial risks far greater than they realize. Familiarity with old installations, and freedom from personal experience with accidents, perhaps blinds them to the actual situation.

Stairways, of course, may be another notable offender from the standpoint of safety. Slippery surfaces, worn treads, broken surfaces, and poor lighting each contributes more than its share to the accident totals each year. Proper corrective measures are not expensive. They range from resurfacing with non-slip materials to adequate lighting.

Corridors present virtually the same hazards as the lobby: slipping, tripping, elevator entrances and so on. The absurdity of the accident claim situation is, by the way, illustrated in the experience of one mid-western building manager. Word reached this manager that a woman had fallen and had seemingly been seriously hurt in an upper floor corridor. He hurried up. The woman explained that she had slipped on a greasy spot on the terrazzo floor and had fallen. The manager examined the "greasy spot" and discovered that it was merely a dark spot in the terrazzo. He protested that no one can slip on a shadow. She refused to argue the point or to alter her story. He asked if she were injured. She replied quite frankly that she would not know until she had seen her doctor—and her lawyer, by the way. The manager, in all sincerity, urged the insurance company to fight the claim which she later presented. Their representatives overruled him, however, and settled at her figure, without argument. Just one case, of course, but every building manager probably knows of others like it. The moral seems to be that it is necessary not only to make floors actually slip-proof, but to make them even look safe.

Toilet-rooms, under normal circumstances, offer few safety problems. One point in passing, however, is that many managers prefer to keep toilet-room windows locked—to defeat the idea of jumping, should it suggest itself to anyone. As a matter of general practice, also, the doors of women's

toilet rooms are quite commonly locked, for obvious reasons. It is, furthermore, generally found advisable to keep fairly close supervision over toilet rooms. The consequences of negligence in this respect are likely to be some highly detrimental publicity among the building's tenants and, perhaps, some undesirable prominence on the news pages of local newspapers. Instances of this kind are quite common, especially in the larger cities.

While tenants' offices are generally held to be under their own control, the building manager through his regular inspection system should assure himself that radiators, light fixtures, windows and so on are not broken or defective and that they are not likely to injure anyone or damage property.

In apartment houses, of course, the management must assume responsibility for many things not commonly required of office building managers. Safety for tenants in the more expensive type of apartment buildings, for instance, involves many special services. Among these are protection at the door, the telephone announcing of visitors, and services of watchmen, receiving room attendants and so on. Space does not permit consideration of these services, but all of them have been discussed fully in past issues, and their importance makes them well worth the apartment building manager's time and thought.

In apartment houses, also, there are many special items of equipment that must be kept in good repair and in safe condition. These items include such things as gas ranges, refrigerators, showerbaths, wall-beds, and, in some buildings, many special types of equipment. In addition, there are most of the general safety problems found in office buildings—the elimination of slipping and tripping hazards, the proper lighting of public areas, the maintenance of safe conditions on sidewalks, stairways and porches, and the supervision of the basement areas where storeroom and laundry facilities are provided.

In office and apartment buildings, there should of course be adequate fire-fighting facilities. Fire insurance inspections and regulations, and local fire department requirements establish the basic provisions for fire protection. But, for the manager who realizes the intangible cost of fires that frighten or annoy tenants, and the inconvenience and possible losses caused even by relatively small fires in modern fire-resisting office and apartment buildings, these regulations may not go far enough. Training of employees in all phases of emergency action is something that each manager must personally plan and supervise. Ordinary training methods leave much to be desired and many employees, in an emergency, are worse than useless. Proper fire fighting equipment for the particular conditions and proper training of employees in its

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In addition to protecting tenants and the public against personal injuries, of course, the building manager necessarily assumes a tremendous responsibility for tenants' property. In most office buildings, for instance, with the average office open only about eight or nine hours, the building staff has complete custody of the tenants' property some fifteen or sixteen hours each day. The precautions that the management takes during these hours must depend largely upon the type of building, the kind of tenants it has, and the nature of their business.

Most commercial office buildings, however, are, during at least part of each night, guarded only by a watchman (or watchmen, depending upon their size). In most instances, it will be well to consider seriously the advantage offered by central station supervision. Because of the common practice of employing elderly men as watchmen, and of the great responsibility placed upon them, some dependable check upon their routine progress through the building is extremely desirable. Proof can be found in the news columns of local newspapers. Accidents to watchmen, sickness and many other unexpected happenings not infrequently leave buildings without protection and, in some instances, leave sick or injured men without assistance.

OAKLAND BASCULE BRIDGE

Harold Ickes, United States Public Works administrator in Washington, D. C., recently announced the issuance of a Federal grant of $190,000 to Alameda county to aid in the construction of the Park Street Bridge across the Oakland estuary.

William J. Hamilton, chairman of the Board of Supervisors, said the grant represents a reduction from the $276,969 asked as 30 per cent of the total estimated cost of $923,230. The county will raise the balance of the money from gasoline tax funds.

A total of 120 men will probably be given employment for two and a half years on the construction of the bridge, which will start within 60 days. It will be of the bascule type, and will have an over all length of 433 feet.

Bids for the construction of the bridge are now being advertised.

ALAMEDA SCHOOL REPLACEMENT

The City of Alameda voted a bond issue of $448,000 December 19th, the money to be expended for new school buildings to relieve the unemployment situation. A Federal grant is expected to increase the total amount of money available to $605,000.

MODERN ELEVATOR EQUIPMENT

Comparatively old office buildings can successfully compete with the latter-day skyscraper, if interior furnishings and equipment are kept up to date. This is evidenced by the recent experiences of the management of the Colcord Building in Oklahoma City, Okla.

The Colcord Building, of twelve stories, was erected in 1910. It was originally equipped with four gearless traction passenger elevators with a speed of 500 feet a minute and entered through the old type wire glass panel doors. In the building which had 70,000 square feet of rentable space, above the first floor, 2,000 feet was consumed by two toilets.

In 1931-1932, two 33-story modern office buildings were erected in Oklahoma City, each embodying the newest features of construction, design and transportation. They offered the old Colcord Building the keenest competition. A modernization program became immediately necessary. This included renovating of the lobby, the elevators and elimination of the toilets.

Three of the main passenger elevators were replaced by the Otis Elevator Company with new signal control elevators, having a capacity of 2500 pounds and a speed of 700 feet a minute. The fourth was made a freight elevator with voltage control and a speed of 600 feet. New doors and enclosures were installed in designs fitting with architecture, with the result of vastly improved general appearance and added convenience. The two public toilets were replaced by toilets on each floor, the location being in two large air and pipe shafts which adjoined the stairway. This released rental space valued at from $4000 to $5000 a year and reduced the inter-floor traffic.

Following the modernization program the Colcord Building now is 90 percent rented as against an average for the city of 64 percent. It has enabled the building to maintain its rental position and protect its investment.

RESEARCH ON HEATING

According to an announcement by Dr. Edward R. Weidlein, Director, Mellon Institute of Industrial Research, Pittsburgh, Pa., the Multiple Industrial Fellowship on heating, sustained in the Institute since 1929 by the National Radiator Corporation, Johnstown, Pa., is continuing actively a number of investigations of interest to heating specialists as well as users of heating equipment. In addition, the Fellowship, whose incumbents are Dr. J. L. Young and Mr. A. C. Jephson, has been lately according more and more research attention to certain problems in air conditioning and also to the development of new products.

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After a thorough investigation of ferrous and non-ferrous heating units, the Fellowship has found that cast iron is the most suitable metal for the construction of finned convectors. Results of work on impregnated wood foundry patterns, now fully patented, are likewise of interest to heating industrialists; this development is of broad application in the fountry field. During the past three years the Fellowship has been engaged in the development of corrosion-resistant materials especially for use in the petroleum and other process industries, conducting this investigation in callaboration with the research department of the National Radiator Corporation. During the course of these studies the findings of the International Nickel Company respecting the place and utility of "Ni-Resist" have been corroborated. The Fellowship has also had a productive part in the design of National condensing sections, for which broad patent protection has been secured.

It is planned to describe the investigational results at length in the literature just as soon as all phases of the researches on the Fellowship program are concluded.

NEW TYPE ELECTRIC HEATER

A new type of heating system is now being manufactured in Glasgow, according to a writer in *Industrial Britain*. The stove is operated by electricity, but in a different manner from any other electric heater. It does not radiate heat, but acts directly on the air, thus raising the temperature of the room without first heating any part of the walls or objects in the room as in the case of radiation.

The method of operation is simple. Cold air enters the apparatus and is electrically heated, then the warm air passes through a grill into the room, setting up a fresh convection current, which warms the room in a very short time.

While the heater is operating, air insulation keeps the outer casing perfectly cool, and it can therefore be made of polished wood or porcelain.

PROVISIONAL CERTIFICATES

California State Board of Architectural Examiners, Southern District, on November 28 granted provisional certificates to Alfred T. Gilman, 11,110 Cashmere Street, Los Angeles; Edward John Mussa, 262 Thorne Street, Los Angeles; Ben Hilliard O'Connor, 123 S. Camden Drive, Beverly Hills.

ADDITIONS TO RESIDENCE

A four-room addition will be made to the residence of J. H. Threekeld in Seacliff, San Francisco, from plans by Bertz, Winter & Maury, architects, Monadnock Building, San Francisco.

SILICA STONE

Premises in Stockport have been acquired by a local firm of builders for the establishment of a new industry for the manufacture of a building material called silica stone.

Silica stone, which is now being manufactured in all parts of the world, has been largely used and specified by architcets in the last twenty-five years. The stone is moulded into brick form, so as to be used instead of burnt clay bricks, and it can also be moulded into almost any desired shape or design for use instead of quarried stone. It is cemented and bonded under enormous pressure, and fused with chemicals under a heat.

Pressure and heat, combined with cementation and fusion, form the process of manufacture. No kilns are necessary, and, in the present case, the manufacture will be carried out entirely by inside machinery.

This new factory provides for an output of seven million silica stone bricks per annum, with a proportion of moulded stone-work.

BOOK REVIEW

FREE HAND DRAWING SELF TAUGHT by Arthur Guptil. (Harper & Bros., 49 East 33rd Street, New York). Price $3.50.

This book is the result of long research and supplies a need for a single condensed volume on free hand drawing. The author is a teacher in The Pratt Institute, Brooklyn, N. Y. There is excellent material for the student in the book, which has been simply arranged for further ease in comprehension. The various stages of free hand drawing are well treated and there is excellent exemplification of the work in numerous plates and illustrations.

TRADE LITERATURE

The Liquid Carbonic Corporation, 3100 South Kedzie Avenue, Chicago, has issued a brochure of great interest at the present time, "The Modern Bar." The treatment in modern decoration and utility is discussed and the brochure is profusely illustrated. Now that the bar is coming back, architects will feel a need to be familiar with the latest in design and treatment of an important architectural detail in residence, club, hotel and restaurant construction. Further details may be obtained by communicating direct to the home office, or to any of the branch offices in San Francisco, Los Angeles or Seattle.

CAFE AND BEER GARDEN

Charles F. Dean, architect, California State Life Building, Sacramento, is preparing drawings for a one story reinforced concrete cafe and beer garden to be erected on the Auburn State Highway, near Sacramento, for the Meredith Fish Company. The estimated cost is $10,000.

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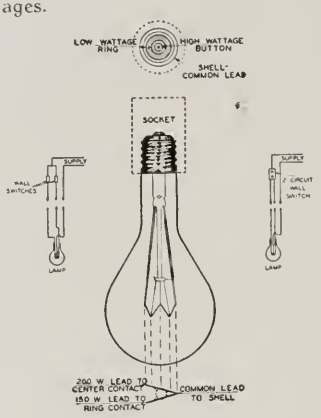
NEW LAMP

To meet a need for greater flexibility of illumination from lighting installations, the Westinghouse Lamp Company is introducing a twin-filament lamp in two sizes. They are to be known as the "Three-Light" lamps and will produce three different wattages.



Line drawing of 150-200 watt Westinghouse 3-light lamp.

The Mazda 150-200 watt lamp in a PS-35 bulb will consume 150, 200, or 350 watts and will list at $1.50. The 200-300 watt lamp in a PS-40 bulb will consume 200, 300, or 500 watts and will list at $2.40. Both lamps are designed with inside-frost bulb and will operate on either 110, 115, or 120 volt circuits.

The "Three-Light" lamp is constructed with a mogul screw base which has two bottom contacts. One contact is an eyelet, somewhat smaller in diameter than that in the present mogul screw base. The other is a ring or washer which surrounds the eyelet.

Contact between the eyelet and base shell will light one filament; contact between the ring and base shell will light the other filament; and contact between both and the base shell will light both filaments to give the maximum wattage of the lamp.

From the viewpoint of flexibility, the new "Three-Light" lamps come at a time that finds us on

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Retail stores are planning to make immediate use of the new lamps to meet the need of flexible lighting so valuable in merchandising and selling. The use of these lamps in present installations will require revamping the electrical set-up somewhat. Switches to permit the three different wattages, and three-way sockets, will be necessary. A third wire must also be added to the wiring. Where lamps with medium screw bases are now used, new sockets must be installed for the mogul bases.

Though multi-wattages lamps are just now being made available to users of light, they are not entirely new to the electrical industry. In the Westinghouse Lighting Institute, which opened in the Grand Central Palace in New York in 1929 and which has since been taken over by the Electrical Association of New York, two filament lamps similar to the new design were used in the Model Electrical Store to show how various levels of illumination affected the general appearance of the store.

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"BUILDERS ALPHABET"

At a recent banquet at the Victoria Hotel, London, under the auspices of the National Federation of Building Trades Employers of Great Britain and Ireland, John M. Theobald (*) read the following "builders alphabet":

A was an architect (calm and correct).
B was the building he hoped to erect.

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C the contractor who lost quite a lot,
D for those details Surveyors had not.
E for the extras those details evoke,
F for the fuss. Clients can't take a joke.
G for the gumption the foreman displays,
H for the Hell that some Clerks of Works raise.
I for that impulse to make the job hum,
J for the joy when certificates come.
K is for the key that we all try to seek,
L to stop labor strikes every week.
M stands for motor cars—builders don't walk!
N for the nonsense Surveyors will talk.
O for omission to get at the cost,
P for the penalties—always enforced.
Q is where modesty bids me refrain, (*)
R for reason I need not explain!
S sub-contractors, whom all of us know.
T stands for Tenders—the lowest too low.
U is the urgency clients exact.
V for day vouchers—more fiction than fact.
W wealth which contractors connect,
X such as Surveyors can never X-pect.
But Y should I murmur regrets on his head?
we're glad you collect it—we can't—
so 'nuff Z.

(*) Member of Council of the Surveyors' Institution.

Honorary Secretary of the Quantity Surveyors' Committee of the Institution (England).

Quoted by F. Brofos, Secretary of the American Institute of Quantity Surveyors, 13 North Tenth Street, St. Louis, Missouri.

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LICENSE PLATE LETTERS

Noting license plates of other cars, many motor vehicle drivers probably wonder at the meaning of the different letters used as a prefix to the numbers. The answer is provided by the Automobile Club of Southern California in the following summary of explanations required from the Division of Registration, Department of Motor Vehicles:

Any single plain letter—an ordinary passenger car.

E in a diamond—a state-owned vehicle of any kind.

E in an oval—a county-owned vehicle of any kind.

E in a square—a city-owned vehicle of any kind.

PC—a pneumatic-tired commercial vehicle.

SC—a solid-tired commercial vehicle.

PT—a pneumatic-tired trailer.

ST—a solid-tired trailer.

PS—a vehicle owned by a franchised public carrier or a cor-

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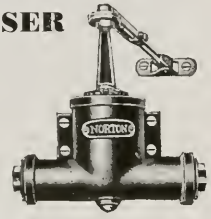

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DLR—a vehicle owned by an automobile dealer. The additional small letter designates which set of plates belongs to that dealer, A meaning his first set, B the second, etc. Some dealers have many sets.

US—a vehicle owned by the United States, or a diplomatic or consular personage accredited to the United States. About 1,800 of these in use in California.

S in red—a car owned by a state senator. The number is the number of his senatorial district.

A in green—a car owned by a member of the state assembly. The number is the number of his assembly district.

X in a hexagon—irrigation and reclamation districts.

UR—a vehicle operated by a cooperative unemployment relief agency.

BE over PC, SC, PT, or ST—pneumatic or solid tired truck or trailer operating under State Board of Equalization permit.

MERRY-GO-ROUND

Once there was a successful French artist whose custom was to dine every evening in a small but select cafe near his studio, and, being of discriminating tastes, it was his practice to order several rare side-dishes with his meal.

One evening he entered the cafe, and while waiting for his order to be taken, picked up a copy of a newspaper which was lying on the table where an earlier diner had apparently left it. In the section devoted to financial news of the day, he read a paragraph which said that there were evidences of grave depression throughout France.

The waiter appearing, the artist ordered his meal and purposely neglected to ask for the usual rare side-dishes. When the waiter expostulated, the artist explained that he would dine without this luxury as times were getting hard.

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This brought the proprietor to the table with concern written plainly on his usually placid face. Again explaining that he was denying himself because times were becoming bad, the artist finished his meal and left the cafe.

The next day the proprietor of the cafe visited his tailor and said: "Times are hard and you need not make up that new dinner jacket I ordered."

The following day the tailor countermanded an order he had in for a new automobile, and gave as his reason, "hard times."

That night the automobile man met the artist at a social gathering and said: "Business is terrible and I think I shall withdraw that commission for my wife's portrait."

So the artist returned to his studio, and as he sat bemoaning his ill luck, his eyes fell upon the paper in which he had read the account of financial depression. To his astonishment, he discovered that it was dated a full three years before.

The following night he ordered the rare side-dishes with his evening repast.

The next day the restaurateur ordered a new suit.

The tailor bought a new car, and the artist painted the automobile man's wife's portrait.—*The Villager.*

NEXT MONTH
the
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1934

Many Attractive Features have been planned for ARCHITECT AND ENGINEER readers, next year.

Articles of vital interest to the profession will be published.

A Special Department for Engineers will be inaugurated.

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THE ARCHITECT AND ENGINEER

JANUARY 1934

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THE NEW KEY SYSTEM PIER TERMINAL

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Los Angeles Architect Invents New Mathematical Curve

A MUSIC STUDIO IN PASADENA
Elmer Grey, Architect

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Thumb Tacks and T-Square

THE people of Berkeley are not at all pleased with the plans of the Board of Education to house 3000 school children in temporary canvas covered structures. The board claims it was forced to adopt this crude method of housing the pupils for precautionary reasons. Some of the permanent structures having been condemned by the State Department of Engineering, the authorities had no other recourse except to close the schools indefinitely. Many of the parents think it bad enough to place the young folks in tents in pleasant weather but to camp them out under canvas covers in the cold and rain, is courting exposure and sickness, they say.

Meanwhile surveys are being made by architects and engineers to determine just what buildings must come down or be reconditioned and a report has been asked to give the taxpayer some idea what he is expected to vote upon in the matter of new structures. There appears to be a divided opinion in regard to the type of construction to be adopted. Some think one story frame buildings would be better earthquake buffers than concrete or steel, but there is a serious objection here since one story buildings must of necessity cover a great deal of ground space and realty values are high in the thickly populated areas where these buildings will have to be built.

:: :: ::

REGISTRATION of architects, engineers and draftsmen who wish to participate in President Roosevelt's Federal Relief program has been going on for several weeks and the organization is expected to be in working order very soon. Those who will be benefitted have been referred to by the press as "the white collar brigade." The term may apply to some but there are a lot of fellows who have almost forgotten what a white collar looks like.

On November 8 President Roosevelt announced an expansion of the Federal Relief Program aimed at putting 4,000,000 men to work immediately on a part-time basis of 30 hours each week, paying the workers a living wage rather than the bare subsistence money paid heretofore by the relief organizations. To accomplish this the President created the Civil Works Administration under the direction of Harry L. Hopkins, and $400,000,000 of Public Works funds have been made available.

Projects which are expected to keep this small army of workers out of the bread line, will include such matters as mapping, planning studies and surveys for the collection of data for zoning, soil conditions, land use and classification, population distribution, schools, park and playground development, port, harbor and waterway work, parkways, highways, traffic, transit, water supply, drainage and sewerage, long-range financial programs, real property inventories, tax maps, building and housing conditions, subdivision control, etc.

As already stated the organization is taking shape rapidly and is expected to be functioning within a very short time. The projects will be handled directly by the State and local Civil Works Divisions being set up in the various centers of population throughout the country.

:: :: ::

A supplementary program of relief, apart from that outlined above, is being sponsored by Secretary of the Interior, Harold L. Ickes. The plan involves a means of furnishing relief to about 1,200 men of architectural training for periods of two months or more, with the opportunity of making an enormous contribution to the history and æsthetics of American life. One important phase of it is that men will be put to work almost at once, with a minimum of equipment, supplies, and general overhead expenses. It is estimated the project would cost about $450,000.

The proposal embodies the securing of the services of a qualified group of architects and draftsmen to study, measure, and draw up plans, elevations, details of the important historic buildings of the United States. Our cultural heritage of buildings from four centuries diminishes daily at an alarming rate. The ravages of time and the natural elements, together with the demolition and alterations caused by real estate changes, form an inexorable tide of destruction destined to wipe out the great majority of the buildings which knew the beginnings and first flourish of the nation. The comparatively few structures which can be saved by extraordinary effort and presented as exhibition houses or museums, or altered and used for residences or minor commercial uses, comprise only a small percentage of the interesting and important architectural specimens which remain from the old days. It is the responsibility of the American people that if the greater number of our antique buildings must disappear through economic causes, they should not pass into unrecorded oblivion.

A National Advisory Committee of seven men will be established to guide the work, four members, to be named by the American Institute of Architects, and three by the Director of the Office of National Parks, Buildings, and Reservations.

:: :: ::

MANY architects have been forced to discontinue their subscriptions to architectural journals for financial reasons. It has been the policy of this magazine to continue to send the book to some of the long time subscribers without billing them, believing that when conditions improve the delinquent accounts will be taken care of. There are some, however, who can well afford to pay their subscriptions, not only to this magazine but to others, yet they seem to enjoy taking advantage of conditions by neglecting to pay up. They are in the same class with the man possessed of a comfortable income who hords his money and thereby helps to prolong the depression. If those who have the wherewithal would spend it and pay their obligations, our financial troubles would soon be over.

Elmer Grey, architect of Los Angeles, says it is not due wholly to the depression that many architects have cancelled or failed to renew their subscriptions to Eastern architectural journals. He declares the real reason is that many architects are not interested in the large pre- [illegible] stuff to which [illegible] vote so much valu-

[illegible]uoting from Mr. Grey's letter to an Eastern publication, we are told that "very few people want modern architecture for their homes. And it is our homes more than anything else which go toward making up American architecture. To say that the style expresses function better than others is a lame defense. The expression of function is not the sole purpose or virtue of architecture or any other art. Modernistic furniture no longer sells, I am told. Recall the reign of Stickley and the so-called Mission and how short it was. Commercial buildings where novelty is a decided consideration and economy often a necessity, offer some excuse for this treatment, but there are conspicuous exceptions."

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JANUARY
1934

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NIGHT VIEW OF FERRY SLIP ENTRANCE, KEY SYSTEM PIER TERMINAL, OAKLAND CALIFORNIA

KENT AND HASS, ARCHITECTS

THE
ARCHITECT
AND ENGINEER

JANUARY 1934
VOLUME 116
NUMBER ONE

THE NEW KEY SYSTEM PIER TERMINAL

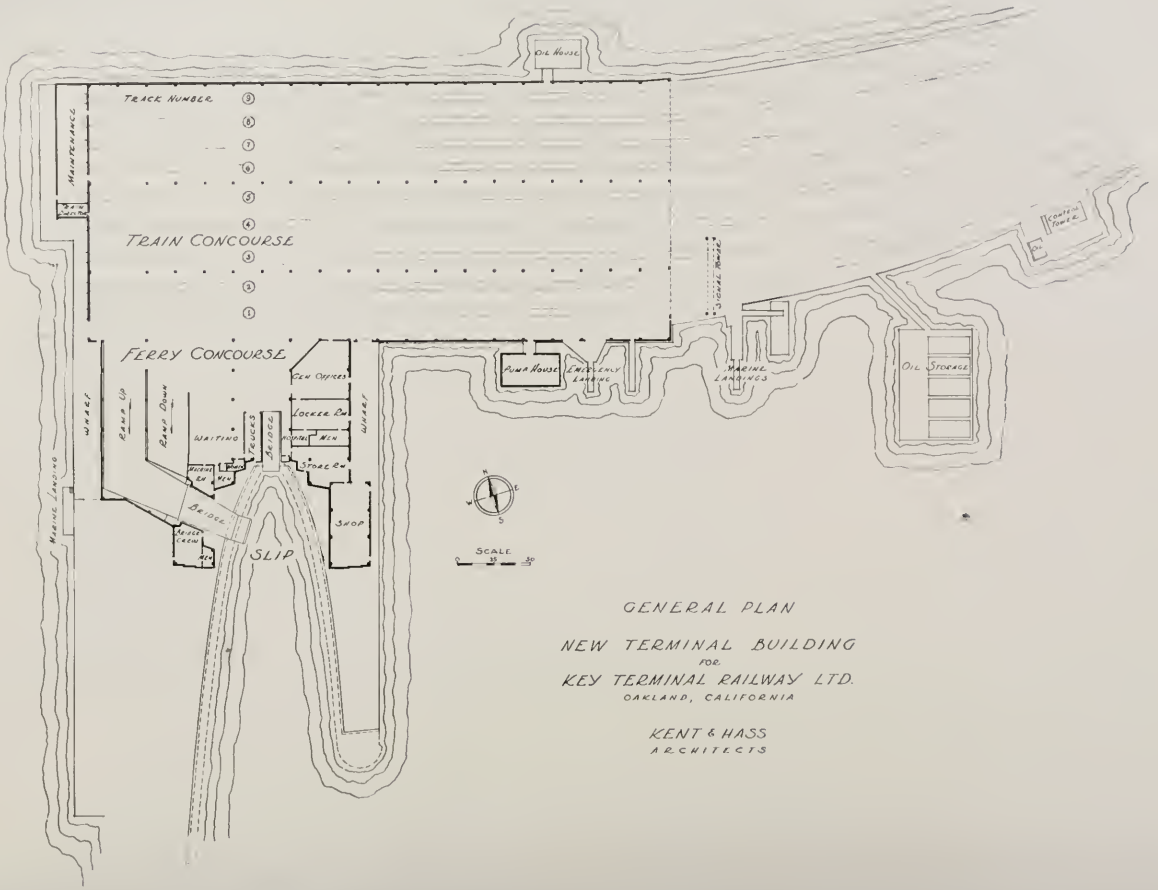
by
FREDERICK W. JONES

THE new KEY System Terminal, Oakland, is unique in construction in that all of the 550 tons of steel in its frame - work are field bolted, instead of being riveted together. This makes possible the easy removal of the structure, if desired, when the Bay Bridge is completed. The terminal is under one mammoth roof and covers 10,000 square feet of uniformly illuminated floor space. There are nine terminal tracks, a commodious concourse for the passengers to and from the ferry boats, and spacious offices for the operating, marine and mechanical staffs.

TRAIN CONCOURSE BUILDING, KEY SYSTEM PIER TERMINAL, OAKLAND, CALIFORNIA
Kent and Hass, Architects

Based on the experience of thirty years in serving the commuting public, every provision has been made for the comfort and convenience of passengers.

The ferry slip entrance to the terminal is unlike the usual slip entrance, due to the novel handling of modernistic design in simple mass forms and the ingenious use for wall and ceiling areas and decorative motifs of an otherwise plain, utilitarian building unit commonly known as corrugated iron. All boats land under this protecting shelter of painted ribbed metal where special facilities are provided to speed up the em-



GENERAL PLAN

NEW TERMINAL BUILDING

FOR

KEY TERMINAL RAILWAY LTD.

OAKLAND, CALIFORNIA

KENT & HASS

ARCHITECTS

barking and disembarking of passengers.

In addition to the customary runway and landing apron from the center lower deck of the ferry boats, there are side landing aprons from both upper and lower decks. From these aprons, spacious ramps with easy inclines lead to the main level concourse. These accommodations have been has been given to night illumination when every section of the terminal can be uniformly illuminated up to a six-foot candle intensity. All of the steel trusses, girders and columns, as well as the metal partitions, walls and roof have been treated with a special paint prepared to meet the climatic conditions and withstand the salt air

Photo by Clyde Sunderland Studios

AIR PLANE VIEW OF NEW KEY SYSTEM PIER TERMINAL
Kent and Hass, Architects

designed to provide the greatest possible freedom of movement and it has been demonstrated that the landing facilities will permit the loading and unloading of 1000 passengers per minute.

The entire floor area of the pier terminal proper is laid with a resilient, fire-resisting covering. In addition to ample daylight in all roofed areas, special attention and the elements. Surmounting the terminal, 80 feet above the dock level, is a giant Neon sign, visible for many miles, and which penetrates the winter fogs with remarkable intensity.

One interesting phase of the Key Terminal interior construction, is the use of metal-thermic panels for the partitions, wainscoting and ceiling. These panels consist of an insulation core with a smooth

UPPER AND LOWER DECK RAMPS FROM UPPER DECK LANDING.
KEY SYSTEM PIER TERMINAL
Kent and Hass, Architects

UPPER AND LOWER DECK RAMPS FROM TRAIN CONCOURSE.
KEY SYSTEM PIER TERMINAL
Kent and Hass, Architects

Photo by M. L. Cohen Co.

FERRY SLIP ENTRANCE, KEY SYSTEM PIER TERMINAL
Kent and Hass, Architects

metal surface that may be painted or treated as the architect wishes for decorative effect. The panels are known to have remarkable structural strength besides being fire-resisting. Light in weight, they are designed with slip joints to absorb the normal movement of the wharf structure.

The latest developments in electrical signalling and despatching devices, as well as the most modern safety equipment, have been installed to govern the operation and control of all trains in and out of the terminal.

The Key System's engineering staff, and the company's architects, Messrs. Kent and Hass, collaborated in the development of the engineering and architectural features of the new terminal. Kent and Hass supervised construction. T. Ronneberg and R. J. Fisher were the consulting engineers.

ROCK PLANT NEAR RICHMOND, CALIFORNIA
PENCIL SKETCH BY ARNE KARTWOLD

STANDARDIZED HOUSES AT LOWER COST A FALLACY

by
H. VANDERVOORT WALSH,
Columbia University

IT is difficult to believe that some one individual can come forward from the crowd of technical men and invent a new and radically different type of house, built by such improved processes that all our accumulated knowledge will be scrapped. Yet in the past few years there have been plenty of candidates for this exalted position. In each case, the investor seemed to be spurred on by ambition to find the one solution to make a house cheaper than any other, and thereby capture the market for American homes and become very rich in the process. The picture is very alluring, that of being the originator of the model house that everybody wants to buy. What an industry it would be if it came about for some one city and group of individuals! What a calamity it would be to those architects, builders, carpenters, masons, electricians who are scattered throughout the land, and who, after all, are a substantial type of citizen in any community.

The point of view taken by those seeking to revolutionize home building methods for their own private gain and in hopes of getting control of the entire market or of getting up a great and powerful industry, has been first to criticise our present methods of building. They have in many cases persuaded the public that the customary ways of building are entirely obsolete and far behind the times.

Don't forget that American builders, manufacturers of building materials, and architects have advanced the science of building in the past 50 years to a degree equal to all the progress made during the previous 4000 years, and it is ridiculous to think that any one man or any small group is going to provide us with the one and only solution of the modern house that will be head and shoulders above that which can now be constructed today by the materials already on the market.

Very often in print we read statements about the backwardness of our methods of building. For instance, we are laying bricks in the same old way they did in Egypt 4000 years ago. Even such exaggerated statements as this are to be heard, that houses are built with the same old materials in the same old way, and that what we need is to completely revolutionize home building methods and turn out houses from factories with all the efficiency of mass production methods developed in other industries.

All of which arguments sound reasonable to the public that is not informed of the facts. And what are they?

First: There have been hundreds, even thousands, of plans drawn up on paper for building standardized houses at lower cost, but none to date has been commercially successful. None has been able to compete with houses built by common and tested means of construction, no matter how efficient.

Second: The houses built by the tried and tested methods are essentially factory-built and standardized houses. Continual changes have been made in making materials to develop products that required less and less fitting and cutting at the site. The size and weight of standardized units have been studied for transportation and easy handling. The principles of pre-fabricating the house have been applied just as far as practical operations would permit, and thus little room has been left for the success of the various so-called factory built houses. This procedure is continuing and improvements are to be noted all the time.

Now when I refer to the modern house, I have in mind one planned to satisfy the living requirements of our day and one constructed of materials which are modern. Manufacturers have been, for selfish reasons, perhaps, keen to improve the materials and equipment offered to them by the home-builder; some skeptics may sneer at this statement of mine, but I know that it can be justified when a broad view of the whole situation is taken over a period of years. Within the last 25 years great technical advances have been made in the study of the chemistry and the physical properties of materials of construction. Much of this study has greatly improved the products and the knowledge of their application. Building material trade associations have done much to assemble information about their products and educate the industry in its use. We have as a result, in our homes today, better lumber, better flooring, better concrete and plaster, better heating plants and plumbing equipment and many other things.

We have also a better group of builders, architects and laborers to erect these houses than we did only a few years ago, when, due to the great boom, every Tom, Dick and Harry went into the building industry.

So with better technical skill and better work from labor, the building of the home today by tested methods cannot be held up to the same criticism and ridicule that it received during the boom period. As the success of the modern house depends upon the skill of those responsible for its design and assembly, we can see that improvements like this are important. We need intelligent leaders to bring out the great possibilities in home building, for manufacturers have been so active in widening the choice of their standardized products that more ability than ever before is needed in selecting the parts to make a harmonious and attractive home.

In the thousands of years man has been building on this earth, he has discovered certain practical facts about construction that time can never change, because they are part and parcel of the universe in which we live. The fact that we still use wood, bricks, stones, tiles, and other old materials in building houses today is not evidence of the backwardness of the building industry, but that these materials give results that no new substitutes have been able to show.

Woods are cut to standard units, or built into doors and windows, shaped into floor boards, or glued together into panels by processes that in every sense of the word are modern and scientific. Machine-made bricks today are not the same old stuff that our ancestors used. The technology of paint has increased the life and beauty of these covering materials. Knowledge in the use of metal alloys has gone ahead in leaps and bounds.

Growing out of the experience of the older trades, we have a continual stream of new materials which are being tried out by these trades.

Americans are always interested in some new wrinkle in building or equipping a home. It is this progresive spirit that has encouraged and supported a constant improvement in mechanical equipment such as heating, plumbing and electric work. But changes are made only step by step and are built upon experience gained from actual use.

Thus, when we build the modern house and equip it, we are only being very sensible in employing methods and materials that have been shown improvements, slowly and consistently. Too radical and novel changes are in most cases full of troubles yet to be found and there are not many home owners who can afford to find them. We do not scrap our homes every two or three years for a new model. Most of them

are expected to last for 30 years or more. We have many models, hundreds of years old, at which we look with more pride than we do at some of the latest designs. Building and buying a house is not the same thing as getting a new car or a new suit of clothes. For most people the building of a house is the biggest thing they do in a lifetime and it is only natural that they should be cautious about untried and untested new materials and methods of construction.

I have noticed that many proposals for new ways of building are based more upon an almost fanatic desire for lowering the costs of houses than upon basic knowledge of the problems involved. For example, I have had submitted to me over many years, hundreds of new ways to build exterior walls of houses. The inventors have invariably claimed that their new wall construction would cut down the cost of the house by one-third or one-half. Yet practically in every case, they have not observed that the total cost of the exterior walls is only about 8% to 10% of the total cost of the house. Thus, no matter how much the cost of the exterior wall was reduced, it could not possibly reduce the cost of the whole house as much as one-third or one-half.

So, too, many of the claims of low cost by designers of houses to be turned out by mass production methods are modified by the statement that such low costs are not possible until production gets under way, and where is the great market that will maintain it? Then the answers are far from convincing. I have yet to see any estimate of a potential market, ready for exploitation.

In the meantime, the cost of the house built by ordinary methods has decreased so much that from a cost angle there is little to attract the home owner to sink his money into an untried, new type. I have been building houses, using modern, tested materials and equipment for as low as 12 and 15 cents per cubic foot, and these have been specially designed for site and owner's needs. I have used local masons, carpenters, laborers and mechanics and selected and bought stock materials from the nearby dealers. Such houses, I am sure, show a lower cost than that promised by the inventors of the factory-built house. The houses which I have built for such low costs are not myths but facts, whereas the costs of some of the promised innovations are still estimates on paper.

What I have done, others can do if they follow similar approaches to the problem. Thus I maintain that low cost houses can be built by tested methods now available and that critics of the building industry who claim that the efficient and inexpensive house cannot come out of the old and tried methods of construction are not informed of the facts. What we need today is to put more effort into using and developing what we have in the way of materials and equipment. Manufacturers offer builders and architects a wide range of standardized units, in fact almost too wide a range from which to select. By using good taste, good sense and good management, efficient, beautiful and low-cost houses can be built from these materials, proved by use. And now is the time to begin. We have a surplus of many goods, but we have a deplorable lack of comfortable and well-built modern homes.—*Real Estate.*

AN OLD HOUSE IN ALBANY, CALIFORNIA
Pencil Sketch by Arne Kartwold

"TUMBLING HOME"—A NEWLY INVENTED MATHEMATICAL CURVE

by
ERNEST IRVING FREESE
Architect

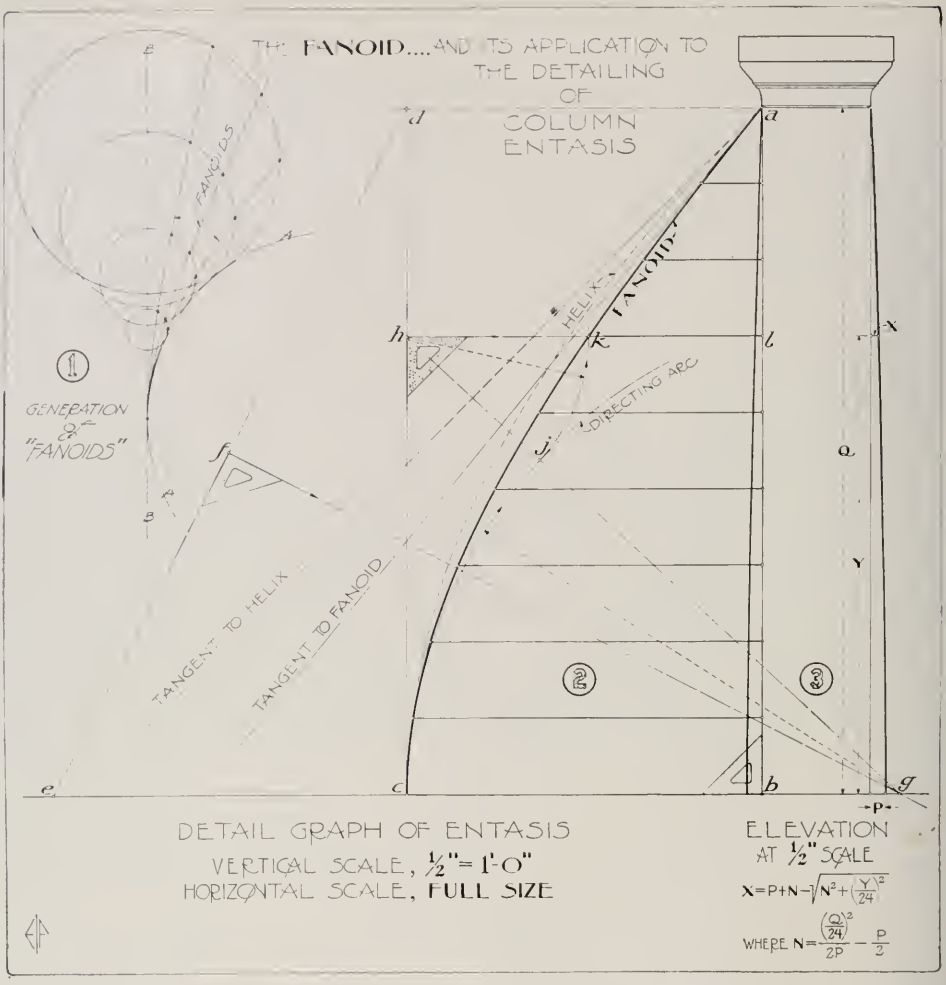
PROBABLY no one factor entering into the architectural design of columns is more contributive to the ultimate effect, whether good or bad, than the slightly curved diminution or "tumble home" of the shaft which, in classical phraseology, we term the *entasis*.

The usual entasis curve, and the construction thereof, that is recorded in all books on the Five Orders, is well known. But, strange to say, it is *not* well known that this so-called "classic" curve is the vertical projection of a cylindrical *helix*. Which, incidentally, proves that draftsmen and architects, as a class, are not so well versed as they should be in . . . descriptive geometry! But let it go at that.

Now, anyone keyed to a fine appreciation of subtle curves realizes that there's something wrong with the vertical projection of a helix when applied as the profile of the meridian section of a column. Notably, this curve tumbles home too roundly. It makes the shaft appear "fat." But fat is not stylish, architecturally. And a *circular* arc or, for that matter, the arc of a *parabola*, is no better in this respect . . . worse, in fact. At the other extreme is the *conchoid;* a curve invented by Nicomedes, a Greek geometer, for the purpose of trisecting an angle. For this purpose, its avowed one, it is a success. As the entasis curve of a column, it is not equally successful. True enough, it does tumble home much more directly than the helix, the circular arc, and the parabola; but it breaks from the perpendicular too hurriedly to satisfy the æsthetic eye, and, in its upper reaches, presages the conchoidal characteristic of reversing its curvature. Finally, between the plump parabola as one limit, and the straight line as the other, an infinite number of *hyperbolas* exist having the same limiting pair of rectangular coordinates. It is conceivable that *one* of these innumerable hyperbolas might be acceptable as an entasis curve. But try and find it!

Wherefore, once upon a time . . . but this is no fable . . . I set myself the task of *inventing* an entasis curve that would satisfy not only the æsthetic requirements of the case but likewise the practical demand for a simple and direct method of full-size detailing. To meet the latter demand, the sought-for curve must yield to scaled-down vertical compression whilst, at the same time, maintaining its horizontal ordinates *full size*.

The drawing herewith records the net results of my investigations. You will note that I have invented not only one, but an



DETAIL GRAPH OF ENTASIS
Ernest I. Freese, Architect

entire family of subtle mathematical curves having the required properties. I have named these new curves "fanoids"; a simple designation based on their collective appearance as shown at Diagram 1. The generation of a fanoidal curve is startlingly free from geometric intricacy. At Diagram 1, let *AA* be a fixed circle, and *BB* a fixed straight line; and let any number of circles be drawn tangent to *AA* and centered on *BB*. Whence, homologous points of the variable circles are the generating

points of the fanoidal family tree, as shown. The simplest fanoid is the one whose generating point is one end of the diameter that lies square with *BB*. Moreover, this particular fanoid becomes a direct *graph* of the sought-for entasis curve, when the vertical ordinates of the former are measured at *one-half-inch scale*, and its horizontal ordinates are measured *full size*. Hence, the problem is solved. Referring now to Diagram 2, the detail graph for any given case is readily laid out as follows:

At the scale of *one-half inch to the foot*, lay off *ab* equal to the desired *vertical* extent of the entasis. Then, *full size*, lay off *bc* equal to the *horizontal* extent of the entasis, that is, equal to the difference between the radii of the lower and upper sections of the shaft. Complete the rectangle *abcd*. Prolong *bc* in both directions; make *ce* equal to *bc*; and locate *g* with the perpendicular bisector of *de*, as shown. With *gc* as radius, draw the directing arc, so named. Now, from *any point* on *cd*, say from point *h*, the horizontal distance *hk* equals the radial distance *hj*. Hence, the locus of point *k* is the required fanoid, or detail graph of the entasis curve; the horizontal ordinate *kl*, for example, is then the *full size* offset of the entasis curve, whilst the vertical ordinate *bl* is the corresponding height at *one-half-inch scale*.

At Diagram 3, I have also given the mathematical equation of the fanoidal entasis curve. By means of this equation, and in lieu of the graphical method just given, the entasis offset X may be computed for any height Y, knowing the total vertical and horizontal extents Q and P. The graphical method, however, is faster and preferable; it gives exact values, whereas the decimal calculation of the formulas would have to be converted to *foot rule* measurement, say to the nearest 1/32 of an inch. Moreover, the graph gives the turner the entasis at *every* point of height, whereas the dimensions would probably be given at foot intervals of height.

For the purpose of comparison, the graph at Diagram 2 also indicates the customary "helical" entasis, as well as the tangents to both the helix and the fanoid. The tangents show the *direction* of these curves at point *a*. From the slope of these tangents it is evident that the *fanoid* tumbles home with more directness than the *helix*, yet without exhibiting any abrupt swerve from the perpendicular. The column thereby gains grace and loses weight. The loss in weight is represented by the area bounded by the fanoid and helix shown at Diagram 2.

The scale elevation, at Diagram 3, shows the appearance of the fanoidal entasis as near as a scale elevation can. But the curve of any type of entasis is so subtle, and of such comparatively minute horizontal extent, that it is utterly out of the question to show it correctly on a scale detail. In the case of fanoidal entasis, a sufficiently close approximation can be achieved, in a scale detail or elevation, by making the entasis offset equal to 1/2 P at a height equal to 2/3 Q, and then drawing as smooth a curve through this and the limiting points as your ability allows. A detail graph, as at Diagram 2, will then take care of the *eventual* curve, and the manner in which it goes "tumbling home."

RICHMOND-SAN RAFAEL FERRY, POINT RICHMOND, CALIFORNIA
Pencil Sketch by Arne Kartwold

A Music Studio

In Pasadena, California

Elmer Grey, Architect

MUSIC STUDIO FOR MISS MARGARET COLEMAN, PASADENA
Elmer Grey, Architect

Photo by Hiller

MUSIC STUDIO FOR MISS MARGARET COLEMAN, PASADENA
ELMER GREY, ARCHITECT

Photo by Hiller

MUSIC STUDIO FOR MISS MARGARET COLEMAN, PASADENA
ELMER GREY, ARCHITECT

Photo by Hiller

VIEW FROM THE GALLERY, MUSIC STUDIO FOR MISS MARGARET COLEMAN
Elmer Grey, Architect

AN ALL-AMERICAN ARCHITECTURE

Story of the Mayan Civilization
Part IV—The First Expedition

by
ROBERT B. STACY-JUDD, A.I.A.

IT was not until the beginning of the year 1930 that I was enabled to undertake my first expedition into Yucatan. The event was the culmination of a seven-year dream.

Leaving New Orleans one fog-bound night we slowly made our way through the Mississippi delta. The mournful sound of numerous fog-horns, as we slowly crept through the eerie surroundings, added a piquancy to the unknown ahead. It seemed indicative of the great adventure which awaited me.

Then, Progresso!

This, Yucatan's only port, is but a short journey from Merida, the capital of the Province of Yucatan.

The city of Merida, the only center where so-called "whites" live, boasts a population of approximately one hundred thousand souls. They are the descendants of the original Spaniards who built the city after the conquest of 1542 A.D.

Merida is partially built of the stones which formed the original Maya city of TIHO, and occupies the same site. Its present inhabitants are known as Yucatecans. The city is remarkable for its extreme cleanliness. The people retain, in a great measure, all the old-world charm and grace of 16th century Spain. On the fringe of the city live Mestizos, half castes claiming a mixture of Maya and Spaniard blood.

Robt. B. Stacy-Judd standing beside two Serpent Column Capitals which he discovered under the dense jungle in Yucatan.

Beyond, south, east and west like fingers of an outspread hand, are trails connecting scores of native Maya pueblos or villages. The inhabitants are direct descendants of plebeian Maya forefathers. Practically pure

of blood, they speak the language of their distinguished ancestors, but can neither read nor write that ancient tongue.

Between these "outspread-finger" trails, and extending far to the south, east and west, is the impenetrable jungle.

Chichen-Itza

Completing the necessary arrangements in Merida, I set forth before dawn one morning en route to the best known Maya city, Chichen-Itza.

Despite a very complete book acquaintance with this ancient metropolis, actual sight of it amazed me. The first structure seen, as we rounded the last curve in the trail, was the Castillo. A nearer view brought into prominence the enormous Ball Court, The Temple of One Thousand Columns, the circular Caracol and others.

To indicate something of the importance and meaning of Maya structures, a brief description of one will prove helpful.

The Castillo or Great Pyramid, as an example, is an amazing structure. It is approximately 200 feet square at the base, 81 feet to the platform level. On the latter, which is 60 feet square, rises a temple 43x49x25 feet high. The temple has four entrances, one on each side. The Pyramid proper is formed of nine great steps or platforms, and was erected with astronomical significance. The Maya year, at one period of their history, was divided into two halves, consisting of nine months each. Each of the great steps symbolizes one-ninth of the half year. Up each of the four pyramid slopes is a broad, stone, continuous-flight staircase, 44 feet wide. Each staircase contains 91 steps, 10½-inch rise

EXTRAORDINARY COURTYARD WALL (Small pyramid in rear) Labna, Yucatan. One of the most remote jungle spots yet visited.

and 10½-inch tread. Four times 91 equals 364. Add to this figure the one-step platform on top and the total is 365 steps or days in one year. There are 52 panels on the four facades of the pyramid. These represent the 52-year Maya cycle.

To explain some of the reasons why knowledge of the Maya subject is scanty and inaccurate, and to indicate the great necessity for caution before pronouncing judgment based merely on superficial investigation, I quote the following incident.

One day as I stood watching the Mexican Government officials restoring the Castillo I remarked to one of the executives that I regretted he had not first investigated the interior. "Bodies?" he inquired with a laugh.

It has always been my belief that the visible structure of the Castillo, as with numerous other Maya buildings throughout Yucatan, is merely a shell covering buildings infinitely older, possibly also secreting occupied sarcophagi.

At that time no action was taken, but later, whether or not due to my remarks, investigation was made and my predictions were more than fulfilled. Beneath the visible temple and pyramid another complete group was discovered far antedating what is known as El Castillo.

Appropos of the Maya gifts to posterity, I might add to their credit a penchant for permanence in everything they undertook. Who in this unstable age, pauses long enough to realize that in one hundred years from now no present American city will be in existence? In a general sense, however, this is true. Each day we are neglecting the opportunity to leave to posterity some

PROPOSED T. A. WILLARD RESIDENCE, BEVERLY HILLS, CALIFORNIA
All Mayan Motifs
Robt. B. Stacy-Judd, Architect

lasting evidence of our present existence. Should a cataclysm overcome Northern America during our present age, the savants of future generations would find practically nothing on this portion of the earth which we call the United States, to indicate even the fact of human occupancy. We are a blind nation, living for the present, taking all and giving little. Among one of the many lessons we can learn from the ancient Mayas is the urge to establish permanent records in stone.

Temple of One Thousand Columns

One of the most remarkable sights I have ever seen occurred one day in Chichen-Itza as I stepped from out a dark jungle trail into the bright light of a late afternoon sun. As though carved from glistening alabaster and illuminated from within, stood the mighty Temple of the Warriors and its one thousand hand-carved stone columns. A storm-darkened sky and the comparatively black jungle as a background, thrust forth this immense structure in startling vividness. It is beyond mere language to express the intensity of feeling which grips one on first catching sight of the Mayan masterpieces. In humble contemplation one involuntarily pays homage to the unknown Mayan geniuses.

A Ball Court

Another structure which possesses great interest for the modern architect is that which is known as the Ball Court.

When the Maya civilization flourished, games requiring considerable skill were of national importance. The game of Pok-ol-Pok, was apparently the most popular native sport. In the immense ball-court at Chichen-Itza this game was played. The court is over 500 feet long by 119 feet wide between the walls, roofless and possessing accoustics which is extraordinary. Experimenting one midnight, I stood in the diminutive temple at one end of the court. Incidentally, the precarious foothold, the ruined wall and columns were swarming with scorpions. Speaking in low tones, my words were distinctly heard and understood by my companions situated in the Pavilion at the other end of the court, over 500 feet away. Experimenting further, I stood with my back against the wall beneath the ball ring half way down the court, and gave a shout. There were sixteen distinct echoes. Situated in an immense expanse of perfectly flat country as is the Ball Court, can it be said that accoustical perfection therein occurred through mere chance or as the result of scientific design? If by mere chance then the permanence of colors, the perfection of cement work, the preservation of their buildings, the accuracy of their calendar and other accomplishments must also be so accredited.

It is generally believed that John Loudon Macadam in the early part of the nineteenth century invented the system of road-making which bears his name. This "invention" like so many other "new discoveries" was the general practice among the ancient Mayas. Hundreds of miles of excellent "macadam" roads cover the Maya area like a giant network. These highways vary in width from nine to thirty feet. The Patio, usually credited to Spain, attained scientific proportions among the Mayas, thousands of years ago. Similarly, the modern apartment house saw its beginning among those great people. Instead of a line of diminutive box-like receptacles such as we benignly term "apartments," the Mayas planned for space, light and air. Moreover it was not possible to disturb the occupants of the neighboring apartments by snoring. The stout solid stone walls and concrete floors took care of that.

The buildings slowly being discovered in the Central American jungles are one and

all invariably dubbed either temples or palaces. This method of indiscriminately guessing the class of structure leads the lay-reader to suppose the residence class was unknown among the Mayas. It is true the working classes occupied cottages of perishable materials, but the upper classes possessed domestic structures of various accommodations and of great dignity in design.

It is unfortunate that the narrow confines of these articles prevent a more extensive description of Chichen-Itza and other important Maya cities together with the wonders of their master craftsmen.

Toward the Unknown

After having covered the eastern area of Yucatan extensively, I returned to Merida. Consuming two valuable days gathering further supplies and making the necessary arrangements, I prepared to leave for the southwestern section.

My baggage, consisting of twenty-two packages, was in the hotel lobby. To a sleepy-eyed night clerk before retiring at 1 a. m., I left strict instructions for a call at 4 a. m. The quaint little wood-burning narrow-gauge railroad train which was to transport me to the pueblo of Muna, was scheduled to leave at 5:30 a. m. At 5:10 I received the call—one hour and ten minutes late; how typical of that easy-going country!

Yelling combined vituperations and instructions at the night clerk, I performed the prodigious feat of leaping in the air and landing in pants and boots upon alighting, or so it seemed. Three extra men appeared apparently from nowhere. My baggage was flung into a waiting taxi and as it roared toward the depot at the darkest hour, I leapt to the running board. As the train pulled out on time, my bags and I were thrust ignominously through a window by wide-eyed and breathless porters.

In the dim glare of a fluttering carbide lamp I stood, a disreputable sight amid my scattered baggage. The amused grins of my Maya travelling companions did not help matters. Unshaven, unwashed, shirt wrong way round, pants and boots undone, I was far from comfortable. To the increased amusement of the numerous passengers, all Mayas, I secured a gourd of water. They followed every movement as I shaved, washed and dressed all over again.

I cannot praise too highly the willing help and many kindnesses bestowed upon me by the Mexican Government officials during my travels in Yucatan. As an example of their courtesy: Upon arrival at Muna I found a vehicle at my disposal.

When night came, in company of a guide, I set forth through the black jungle trail to Uxmal (pronounced Ouch-Marl).

That night I slept in a hammock in the open alongside a guide whom I had met but a few hours earlier for the first time. Neither spoke the other's language, so we kept our own counsel. His alarming snores awoke the neighboring jungle life. Relief came at a late hour, when a small snake fell on my sleeping bag. I heaved and flung the reptile, without intent, across the intervening space between the hammocks. To my amusement, the wriggling nuisance alighted over the open mouth of my companion. His yell and surprised leap ended by landing him on the ground.

The rest of the night was peaceful. The last I remember was a blurred view of the monster silhouette of the Adivino pyramid. In tingling anticipation I dreamed of days and weeks ahead, of journeys into little-known country, even the unknown.

Uxmal

Uxmal!

Queen of Maya cities. The city of beauty and intense mystery.

By great good fortune I was invited to join the Tulane University expedition which at that time was based in Uxmal. For the next two weeks I worked strenuously from dawn until long after dark. Enriched with scores of excellent photographic stills and considerable motion picture footage, this part of the venture proved to be a great success. Visiting all the known and many hitherto unknown buildings, the time passed all too quickly.

Space prevents a lengthy description of all the known buildings in Uxmal. However I will review one or two of the more important structures.

EL ADIVINO, UXMAL, YUCATAN. One of the most unique buildings on earth. It antedates the Christian era. Is oval on plan and supports two temples, one on top and the other slightly beneath. The author believes this steep sided pyramid secretes a fund of information as well as archaeological treasures.

The ADIVINO is one of the most extraordinary buildings on earth. It consists of an immense pyramid with two temples on top, one slightly below the other. Instead of the usual square base it is practically oval. Its sides are exceedingly steep.

Originally there were two staircases, each leading in a single flight to the respective temples, but on opposite sides of the Pyramid. The shorter flight is almost completely destroyed. The other is now in such bad condition that the climb is dangerous. From the top of the upper temple the jungle is seen stretching in an endless vista to the horizon in all directions. I cannot help but believe that this mysterious pyramid will, in time, divulge secrets of considerable value.

PALACE OF THE GOVERNOR

One of the most interesting buildings in this city is the unique structure known as the PALACE OF THE GOVERNOR. This magnificent monument to Maya art stands on a triple solid stone terrace 35 feet high and approximately seven acres in extent. The building ranging along one side of this vast platform is 325 feet long, 39 feet wide and 25 feet high. Incidentally I counted approximately 20,000 carved single stones in its four facades.

Naturally, surprise is the main factor in jungle exploration. The otherwise tedious monotony of cutting a trail is brightened by a variety of exciting incidents. Hardly an hour passes without an unusual experience. On one occasion I remember an incident which caused more than an ordinary tingling sensation up and down my spine. While wielding the long-bladed machete, I glanced to my left. Twenty-five feet away could be faintly seen the outline of a jaguar. To shoot through the dense jungle would have risked missing a fatal spot. A wounded jaguar is fury incarnate, so I chose the wiser course. As we slowly progressed, the animal kept silent pace. At last, his curiosity satisfied, he noiselessly vanished—much to our relief.

On another occasion while obtaining photographs of the remains of an enormous building known as the CASA DE LAS PALOMAS, I stood on the debris of the second story. A stone slipped beneath my feet and the camera and I fell through an opening on top of a family of iguanas, fifteen feet beneath. These horny-shelled reptiles ranging from four to over six feet

in length, are not the best of bed fellows. The next few moments were full of action. Frantically the iguanas and I sought to escape. Dust filled the chamber and it sounded as though Bedlam were let loose. It is safe to say however I was the last to emerge. Fortunately, although I was somewhat bruised, the camera was unharmed.

THE LOLTUN CAVES near Tabi. First picture to record the beauty of these practically unknown caves. The author and his three native guides were lost within its confusing labyrinth for five hours. Their remarkable rescue by an unknown jungle hermit climaxed a strange adventure.

Our base camp center, the CASA DE LAS MONJAS, proved to be one of the most fascinating of all Maya structures. It stands on a solid stone base approximately five acres in extent, and over 30 feet in height. The building is in four distinct sections, forming an enormous open square. Each wing is of a distinct style of architecture and they were no doubt erected at widely different periods.

One morning I discovered a loose stone half way through an opening which I pulled out. In clear view was the face of another wall. After examination, this discovery led me to the conclusion that the group is far older than hitherto believed. As a matter of fact, the sum total of my investigations in Uxmal led me to the conclusion that this ancient city far antedates the period generally assigned to it. But such is the result of exploration among Maya ruins. There is always surprise, always the element of conflicting evidence. It is wise before passing hasty judgment, to make a thorough study of each and every structure.

ON TO THE UNKNOWN

The work in the Uxmal area ended all too rapidly. I had planned to seek other

fields. With great reluctance, and after a fitting send-off on the part of the Tulane Expedition members, I set out alone on what proved to be one of the most adventurous locales of my expedition.

One night late, I arrived in the remote native pueblo of TICUL.

This quaint, purely native community is on the very fringe of humanity, the border of the unknown. To me, it was the edge of the portal to a lost empire. There is an intense fascination in not knowing what fate has in store on the morrow. In my case not even the direction was clear to me.

Imagine my situation alone in the black of night, in a strange native village, unknown to any one of the inhabitants, yet bargaining. This ancient art I was forced to conduct by signs only, as the language of each was unknown to the other. The spot chosen for the business transaction was a diminutive native store. We stood amid a heterogeneous collection of native foodstuffs and general goods beneath the dim light of a hanging oil lamp.

By chance I learned of an explorer who had died of fever in Ticul a week or so prior to this incident. His effects I was told, included an ancient Ford car which, my informant said, was left to form part of the community's prized possessions. Good fortune favored me. After reaching Ticul my enquiries verified the truth of the story. By twelve midnight on the day in question I had either bought or hired (I never knew which) the Ford car. Dame Fortune blessed me with additional favors. I discovered a drum of oil and some cans of gasoline.

To climax the eventful day, I managed to engage the services of the two natives whom my unfortunate predecessor had hired and taught the rudiments of Ford mechanics. When it came to purchasing a stock of food the selection was limited. Transportation difficulties on the one hand and practical necessity on the other demanded quantity with simplicity. Our supply therefore consisted of sacks of black beans and a quantity of native chocolate. I discovered and purchased six very old tins of mysterious edibles ranging from bully beef to condensed milk. All available empty cans and gourds were filled with the most precious of all commodities, water.

When all was ready I sought my hammock, which I slung in an empty structure. Tired as I was, I could not sleep. Three husky pigs insisted upon scraping their rough backs on the underside of the hammock.

Before dawn we were on our way, roaring, rocking and bumping at the breakneck speed of ten miles per hour through the pueblo of Ticul. For reasons which I cannot go into now, we first visited OX-CUTZ-CAB where we replenished the radiator and the water gourds.

From there on, for weeks, we cut a virgin trail across the "impossible" Cordilleros and other territory. Over blistering-hot, slippery boulders, over felled tree trunks and jungle growth, the faithful "Lizzie" lurched and bounded. Time after time we hoisted the craft bodily on top of rocks and over every conceivable obstruction. It was like a roaring demon, backing, clanging, crashing through the pathless jungle. Accident followed accident swiftly. Many times we suffered apparently hopeless disaster. Wheels were snapped off, the frame broken, the radiator punctured, tires blown, the body crushed, the brakes wrecked. Still we progressed. A quarter of a mile a day was sometimes our limit.

THE HELL OF IT

As the days spread into weeks our discomforts increased. The torturing heat,

scarcity of water and diminished food supply assumed serious proportions. At times we starved for days. Fevers, fortunately missing my guides, frequently contributed their share to weakening my system. Huge serpents, as well as the numerous poisonous snakes, beset the trail. Blood-sucking vampires attacked us at night. But worst of all were the continuous attacks of the insidious garrapatas. These infinitesimal insects burrow beneath the skin and lay a multitude of eggs which later hatch into colonies. The pain and discomfort is excruciating. And as though to mock at our misery, the ever-present vultures circled effortless above us, their hideous glare foreseeing our demise.

All in a Day's March

Morning after morning we left our hammocks at the darkest hour. When possible, I alloted to each member of our party a pint and a half of water for the day's consumption. Each morning I bathed and shaved, using part of my share (a considerable feat, I may mention), after which I covered my entire body with a solution of tobacco juice and alcohol as a preventative against the garrapatas. In the increasing heat the aroma of this necessary but unpleasant lotion became more and more nauseous as I perspired. Breakfast consisted of black beans and chocolate. At sun-up we were on our way. The second and last meal of the day consisted of the same fare. Immediately after the meal my guides slept while I wrote my diary in the dim light of a candle. Sometimes on rare occasions we listened to the strains of classical music furnished by the portable phonograph. There is nothing to compare with the lonely jungle at night under these conditions. Immense fire bugs perform their pyrotechnic display to the soft murmur of insect life. Night birds call to their mates. Nocturnal rodents and prey-seeking animals occasionally signify their presence. At times the snarl of the jaguar lends its terrifying sound to the awe-inspiring jungle symphony. And later comes the great silence, when all wild life sleeps. It is fascinating beyond description.

The Dream Fulfilled

During this long and arduous campaign we visited the magnificent though fast deteriorating haciendas of Tabi, Santa Ana, and others. I was fortunate in being the first to procure photographs of the practically unknown Loltun Caves. Incidentally we were lost in this vast underground labyrinth for almost six hours and rescued at the psychological moment by a weird hermit, unknown to Government officials or natives. But, as Kipling would say, that is another story, far the most exciting of all my experiences.

In the ancient deserted Maya cities of Labna, Zayi, Kabah and many others I secured prized photographs and valuable information. Each of these amazing cities possesses magnificent temples, pyramids and palaces. In this area of the expedition work, physical suffering culminated at Kabah. Foodless, drinking-water gone and fever-stricken, I was forced to drink the filthy fluid from the Ford radiator. In a semi-conscious state, I rested on the running board. The next I remember I was in the courtyard at Santa Ana, on my hands and knees amid a family of pigs, drinking water out of their trough. All in all, it was an amazing experience. Despite the hardships, my cup of dreams was filled to overflowing. Each day had brought more than its quota of surprise, excitement, and discovery. It was, to me, the adventure supreme.

In the February issue Mr. Stacy-Judd will review some examples of his design attempts in the new style.

ROCK BUNKERS IN RICHMOND HARBOR, RICHMOND, CALIFORNIA
Pencil Sketch by Arne Kartwold

METHODS OF APPRAISAL FOR REFINANCING HOME MORTGAGES

THE basis of establishing valuations for governmental refinancing of home mortgages was explained in detail by the Home Owners' Loan Corporation in a recent statement from Washington.

Appraisal forms and regulations were drawn up by the Corporation after consultation with a committee of experts from the American Institute of Real Estate Appraisers, a part of the National Association of Real Estate Board, headed by Phillip W. Kniskern of New York, president of the Institute.

Particular care has been taken in the selection and training of appraisers in the employ of the local offices of the Corporation. In many cases real estate men of outstanding ability have been retained on a fee basis. State managers have been instructed that all appraisers shall have a knowledge from experience of the value of property in the territory in which they are operating. Each appraiser should have one or more of the following qualifications:

(1) At least five years of actual full time experience in the Real Estate brokerage and appraisal business;

(2) At least five years' experience as an appraiser of residential properties for a banking or home financing institution;

(3) Experience in assessing residential property for the city, town, county or state government;

(4) Be qualified as an expert appraiser in court;

(5) Be a member of the American Institute of Real Estate Appraisers;

(6) Be otherwise professionally qualified beyond doubt, as a builder or architect (to apply in rural regions).

In the unique and scientific plan of appraisal worked out by the Corporation the purpose is to arrive at the fair worth of the property, that is, the present-day reasonable value of the property to the home owner as his home. Appraisers are instructed to give equal weight to:

(1) The market value at the time of the appraisal, (2) the cost of a similar lot at the time of the appraisal, and the reproduction cost of the building, minus depreciation, (3) the value of the premises, arrived at by capitalizing their reasonable monthly rental value over a period of the past ten years. These elements are added together, and then divided by three in order to arrive at the appraisal of the Corporation.

A typical example might be that of a home which was soundly worth $10,000 in 1920; and therefore, at that time, when there was a fairly normal market for homes, had a market value of $10,000. Assume that this home today has a market value of $7,000. Assume that the present cost of a similar lot, plus the reproduction cost of the house, less depreciation, gives a value of $6,500. Further assume that this home had a rental value of $100 a month ten years ago but now has a rental value of only $50 per month. After this average rental value is capitalized (on the customary local basis) the home would be valued at $7,500.

Adding together the three respective values as above, namely $7,000 for present market value, $6,500 for reproduction value, and $7,500 for capitalized rental value, a total of $21,000 is reached. Dividing this total by three, there is a net re-

sult of $7,000. Thus, the "present appraised value" of the home as fixed by the Corporation, would be $7,000.

On this property the Home Owners' Loan Corporation can advance a total of 80 per cent, or $5,200 in bonds; or 40 per cent in cash in exchange for an existing mortgage, or 50 per cent in cash on an unencumbered home, subject to the provisions of the law.

After the filing of the application, a preliminary appraisal is made by an employee of the Corporation. If this appraisal, together with the other circumstances of the case, places the loan in the class of those approved for consideration, a complete paid appraisal is made. The manager of the State office, after consideration of all the facts, shall fix the final appraisal, but the same shall not exceed the figure of the paid appraiser by more than 10 per cent. The manager is authorized to use additional appraisers on any home if in his judgment it is necessary. The appraisal is finally subject to review by the central office of the Corporation in Washington.

In arriving at the depreciation figure, three factors are taken into consideration: (1) deterioration in physical condition caused by age or faults in design, material, construction or maintenance, (2) obsolescence, (3) and unsuitability to site or location.

Questions in regard to the value of the lot include size and shape, whether on a corner or inside, exposure, grade with relation to street, hazards to present or future development, nature of present or future improvement, character of neighborhood, zoning, neighborhood improvements, restrictions, easements, history, adjoining improvements, paving, curbs, sidewalks, public services such as water, gas, electricity, sewerage and telephones, relation to city plan, population trend, shifting of urban districts, racial elements, social character, fire protection, taxes, insurance rates, support from business or industry, transportation, shopping, educational, religious, amusement and recreational facilities, frequency of sales, vacancies, probability of appreciation or depreciation, marketability and security.

Working from a break-down analysis of costs, base prices have been established that embrace buildings in any class or age. The square or cubic footage of the building is first computed. Variations for size, and such component items as labor, material, equipment, design and construction are allowed for. If the building under appraisal is properly classified, and proper additions are made for its deviation from the basic description, the reproduction cost obtained should not vary from its actual reproduction cost in a degree as great as the variations which commonly appear in estimates by different contractors in actually bidding upon the same piece of work.

More than twenty-five classes of homes are recognized by the appraisers of the Corporation, beginning with old style cottages of frame construction from the one story to the one and three-quarters story type.

The appraiser is directed to hold his findings as confidential until released from the obligation by the Home Owners' Loan Corporation or by due process of law, and to promptly disclose and return any appraisal assignment provided he contemplates, has now, or has had heretofore, any interest, in or connection with, the applicant, the mortgagee or the property.

He is also instructed to keep himself well informed on local wages and costs of building materials, and to maintain personal records of rentals paid, sales of real estate,

[Turn to Page 42]

SHORTER METHODS IN PERSPECTIVE DRAWING

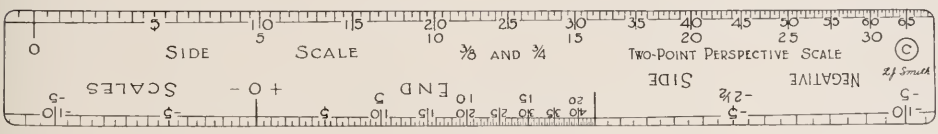
by
Prof. L. J. SMITH

THOSE who took a course in drawing that included the development of perspectives, will recall the lengthy process of projecting the essential points from the plan of the object down to the eye position through the picture plane, and thence from the picture plane down to the perspective drawing. This took a lot of time and a good deal of drawing board space. After a number of years of study and experimenting with different systems calculated to simplify the usual rather complicated process, the writer has developed a set of scales by means of which the perspective may be drawn directly upon the paper somewhat after the manner of the isometric drawing, but using the customary vanishing points used in ordinary perspective developments.

The accompanying illustration will briefly explain this shorter method. The line of the horizon is drawn near the bottom of the paper at L-L, then the ground line G-G is drawn 5 or 6 feet below the line of the horizon using the desired scale, for example ¼ inch equals 1 foot. From O on the ground line a perpendicular is drawn. The near corner of the object will be in this line.

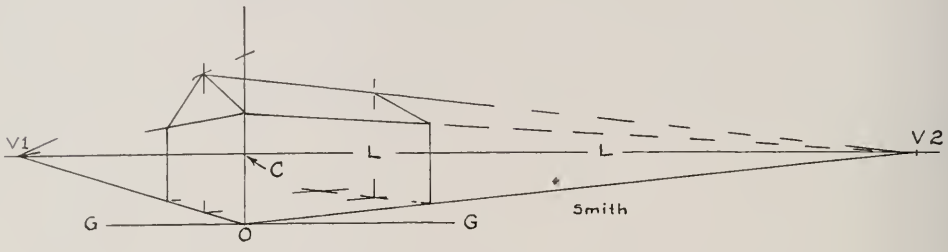
The next step is to locate the vanishing points, V1 and V2. Lay off C-V1 equal to the length of the object. Measure C-V2 three times the length of the object, using the same scale as before. From O g draw O-V1 and O-V2, which lines represent where the near end and side of the object rest on the ground. The depth and length of the building and the locations of the doors and windows, etc., are all measured from using the scale ¼ inch equals 1 foot on the special scale developed for this purpose. There is one scale for measuring along the side and another for the near end of the object.

It should be remembered that all vertical distances are measured from O on



O-C, using the corresponding scale on the architect's rule.

These special perspective scales both simplify and speed up the development of perspective drawings. They are not complicated. We are using the scales for the third semester. They take a good deal of the mystery out of some of the more complicated methods of drawing perspectives. Anyone interested in this shorter method may secure further information concerning the process by addressing the writer, Elmhurst Apartments, Pullman, Wn. The rules may be had in 12 and 24-inch lengths, the scales being either ¼ and ½, or ⅜ and ¾ inch to the foot.



REFINANCING HOME MORTGAGES

[Concluded from Page 40]

current listing prices of owners of real estate and such other factual data as might aid in forming an opinion of fair value in the locality.

He is to consult with builders, real estate men and tax assessment officers who are familiar with the neighborhood of any piece of property to be valued.

Each home is appraised by one agency or another three times before the actual closing of the loan. The fee appraiser is paid, in each case reported on by him, whether or not the loan is finally granted. The Corporation endeavors to avoid the cost of a fee appraisal on applications that are not to be approved.

In the appraiser's report form adopted by the Corporation there is provision for eighty-six questions, most of them subdivided. A plat of the property is included with the legal description. A photograph of the house is also obtained. Among the intangible factors gone into is "home atmosphere from pride of ownership standpoint."

The appraisal of the property is made in its condition at the time, and the amount of the necessary expenditure for repairs, as determined by competitive bids from contractors, may be added to the amount of the final appraisal of the Corporation. The Corporation may lend or refund a percentage of this total as provided in the Home Owners' Loan Act. One of the functions of the fee appraiser is to procure, in cooperation with the home owner, two bids from responsible repair men or contractors for the necessary repairs and maintenance and forward these with his report.

One of the conditions of any loan is that the home must be in sound condition at the time the refinancing takes place. Therefore, the amount necessary to be paid by the Corporation for repairs, if any, plus the other expenses and the amount of the loan itself, must fall within the percentage of the appraisal value which the Corporation is authorized to loan.

RANCISCO
LIBRARY

Engineering and Building Construction

The first pier completed for the San Francisco-Oakland Bay Bridge, foot of Harrison Street, San Francisco. The pier stands 40 feet out of water and is 52 feet wide by 122 feet long.

BAY BRIDGE PROGRESS TO DATE AND FORECAST FOR 1934

SAN FRANCISCO-OAKLAND BAY BRIDGE. INTERIOR OF A SHEET PILING COFFERDAM AT PIER E-20

Within this stockade of interlocking steel sheet piling, 300 wood piles have been driven into the stiff material at the bottom of the bay. The water has been pumped out and a seal of concrete laid over the butts of the piles above the mud. Concrete will be placed within this piling and the piles removed, leaving a concrete block 45 feet thick resting up pilings embedded in its bottom and extending 40 feet farther into the firm foundation material. This pier construction method is typical of all the piers along the Key Route Mole, just off the Oakland tidelands.

BAY BRIDGE CONSTRUCTION WORK ENTERS SPECTACULAR STAGE

by
EARL LEE KELLY
State Director of Public Works

THE most important, although largely invisible undertaking in the building of the San Francisco-Oakland Bay Bridge, is now in progress. This is the under-water construction of the huge piers which support the towers, cables and their loads in the West Bay, and the cantilever and simple truss spans of the East Bay crossing.

However, the lay observer cannot visualize this work and the engineer cannot actually see it, even though he may know the smallest detail of the conditions and operations are in progress 170 feet below the surface of the water.

For that reason bridge work 150 feet above the surface of the water is always more spectacular than that 150 feet below the surface, even though the latter may,

by the very reason that it is out of sight, be the more difficult.

Therefore, while the present work on bridge substructures, especially the huge, originally - designed, compressed air flotation caissons being sunk in the West Bay, is a wholly authentic spectacle and one which inherently merits the engineering discussion it has provoked, its attention will be slightly overshadowed by that which during 1934 will be given to the erection of the suspension towers and other superstructure work on this world's largest bridge.

In other words, although not admitting the superstructure to be more spectacular than the substructure, the writer predicts an increasing volume of public interest in the construction of the San Francisco-Oakland Bay Bridge this year because so much of it will be easily visible to the commuting public. Bridge Builders, Inc., Henry J. Kaiser, President and Transbay Construction Co., Charles Swigert, President, are contractors on the East and West channel substructures, respectively.

However, it must not be inferred that the superstructure of this great project is not a spectacular undertaking.

Stupendous Towers

When it is contemplated that a single tower of the suspension structure stands 505 feet above water, and that each of the two shafts which, bound together by diagonal bracing, constitute the tower, has a dimension in plan of from 32 feet by 19 feet at the base to 12 feet by 15 feet at the saddle, it will be seen that just one of these units of the bridge is in itself a great undertaking.

The steel for these cellular towers is already proceeding through the mills of the United States Steel Company, being fabricated in segments which will be shipped by rail to San Francisco.

Erection of the steel towers by means of creeper derricks supported on posts planted inside the cells of each tower shaft will begin in the middle of February, on Bridge Pier 2 on the San Francisco harbor line.

Pier 3, 2310 feet farther out, is scheduled to be erected starting in September, of this year.

The concrete anchorage, midway between San Francisco and Yerba Buena Island, is scheduled to be completed up to the point where the cables enter, during the year 1934.

Pier 5 will be the latest to receive its tower construction, starting late in December, 1934.

Pier 6, that next to Yerba Buena Island, will see tower erection begin in July, 1934, and the completion of this tower is scheduled for September of this same year.

In the East Bay deck truss spans are scheduled to be completed this year.

Columbia Steel Contracts

Contracts for the superstructure of the San Francisco - Oakland Bay Bridge are held by the Columbia Steel Company, of which E. J. Schneider is contracting manager.

This steel job on the superstructure of the San Francisco-Oakland Bay Bridge is the largest steel contract ever let, totaling more than twenty-two million dollars.

High lights in the construction of the San Francisco-Oakland Bay Bridge scheduled for 1934, as well as a record of the progress of 1933, as taken from the report of Chief Engineer C. H. Purcell to the Department of Public Works are as follows:

"All the substructures of the West Bay sector of the San Francisco-Oakland Bay Bridge will be completed in 1934.

"During the year 1934 three of the four

AIR VIEW OF SAN FRANCISCO-OAKLAND BAY BRIDGE, EIGHT AND ONE-HALF MILES LONG, INCLUDING APPROACHES

ARTIST'S CONCEPTION OF SAN FRANCISCO-OAKLAND BAY BRIDGE
CONNECTING SAN FRANCISCO WITH YERBA BUENA ISLAND

steel towers of the twin suspension bridges of the West Bay crossing will have been completed, according to progress schedule, and the concrete center anchorage between the twin bridges will be raised until its top this being the largest bore tunnel in the world, 58 feet high by 76 feet wide. The vehicular tunnel will not be completed until 1936.

"The cable anchorage tunnels, in which

SAN FRANCISCO-OAKLAND BAY BRIDGE

Photograph taken south of the west approach cut to the Yerba Buena Island Tunnel, showing cut in foreground made ready for the deck of the bridge. Note piers under construction along lane of the bridge.

stands 236 feet above water. (Its final height when completed will be 301.5 feet above water.)

"The San Francicso cable anchorage and Yerba Buena Island cable anchorage will be built up as far as possible pending the cable spinning process which will not start until 1935.

"In the East Bay, 20 of the 22 piers, or substructures, will be complete during 1934.

"Superstructure construction in the East Bay will be undertaken starting in May, 1934, and by the end of the year should be 30% complete.

"The Yerba Buena Island vehicular tunnel will be 40% completed during 1934, the 28-inch cables will be attached to steel eyebars embedded in concrete, will be complete during 1934.

4,000 Men Given Work

"Employment in the San Francisco metropolitan area directly in the construction of the bridge will reach a peak during 1934 of more than 4,000 men.

During the year 1933, one pier, Pier W-2 at the tip end of San Francisco Harbor Dock No. 24 at the extreme west end of the bridge, was completed.

"Twelve other piers were placed in construction during 1933, some of which are far advanced toward completion.

"The cable anchorage on Rincon Hill, San Francisco, was built up to 25% of

completion, and excavation was started for the Yerba Buena Island cable anchorage during the past year.

"Six million dollars were spent on bridge construction in 1933, and nineteen million dollars will be spent during 1934.

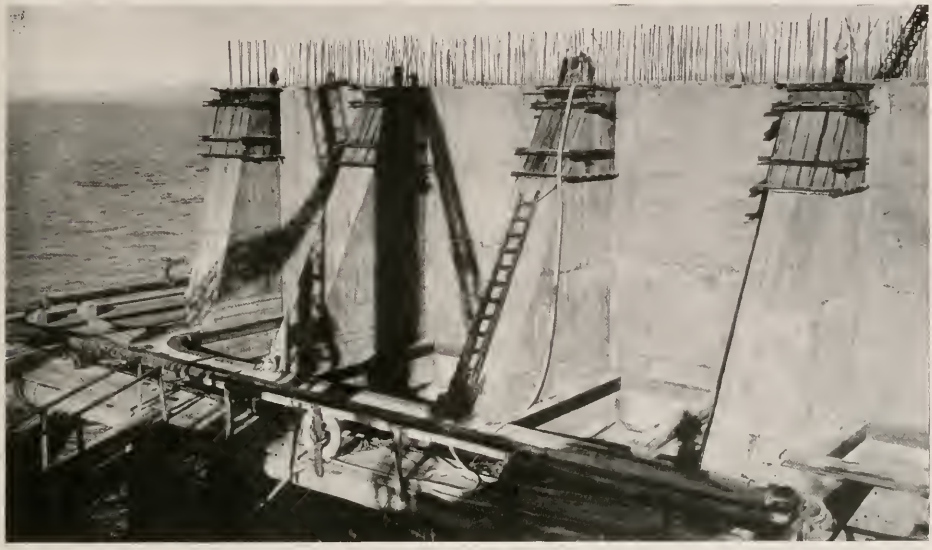
"By the close of 1933 some 5,000 tons of cable wire, or 25% of the total amount required, had been completed in eastern steel mills, and 2500 tons of this amount have already ben brought in ships to San Francisco yards of the Columbia Steel Company.

"Nearly 50% of the anchorage steel work has gone through the eastern mills. A small quantity has been delivered and is stacked at Rincon Hill.

"Fabrication of two towers is well under way.

"During the first six months of bridge construction a total of 110,000 cubic yards of concrete was placed.

"The employment peak of 1933 was reached in November with 2,100 men at work in the bay region, in addition to those in eastern steel mills. At the close of the year 1933 the payroll stood at 1,990.



TOP OF PIER E-5, SAN FRANCISCO-OAKLAND BAY BRIDGE

This picture was taken December 1, 1933, when the first pour began to taper off, with thre foot thick buttresses at each cells cross wall. Pier will go to a final depth of 170 feet. Its bottom now rests 121 feet below water level.

BRIDGE CAISSONS NAMED

West Bay Crossing

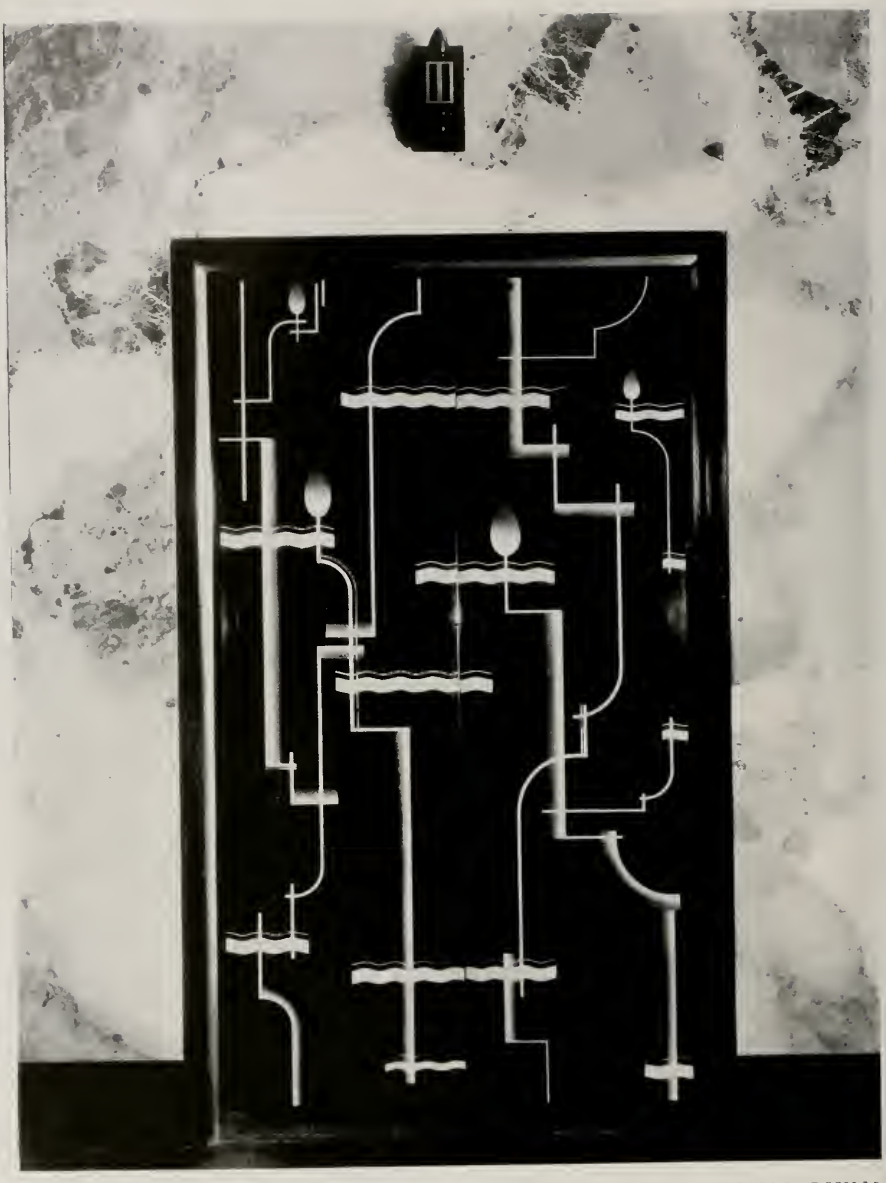
Caisson for	Launched	Christened
Pier 6—	7-27-33—	Chas. F. Swigert
Pier 4—	8-11-33—	J. A. McEarchern
Pier 3—	11-17-33—	Chas. Derleth, Jr.
Pier 5—	12- 1-33—	H. J. Brunnier

East Bay Crossing

Caisson for	Launched	Christened
Pier E-5—	8- 7-33—	Henry J. Kaiser
Pier E-4—	9-27-33—	Edward H. Connor

CLINTON GETS CONTRACT

Clinton Construction Company, with a bid of $253,665, has ben awarded a contract to build 1072 feet of substructure and lower deck girder spans at the easterly end of the San Francisco-Oakland Bay Bridge.



ELEVATOR DOORS IN JOINT SAVINGS SOCIETY, SHANGHAI, CHINA

A new stencil process, introduced by the Otis Elevator Company. The doors pictured above which have a different color scheme for each floor, were designed by L. E. Hudec, Architect.

NOTABLE DEVELOPMENTS IN ELECTRICAL INDUSTRY IN 1933

by
JOHN LISTON
General Electric Co.

THE modernization of industrial plants continued to be an important factor in the development work of the year, and improvements were made in the design, construction, or operating characteristics of practically every class of apparatus for industrial service.

The demand for such equipment, which first became of noticeable proportions in 1932, was greatly increased in 1933. In the latter year, a new element was added by an increased modernization demand for central-station switching and distribution equipment, stimulated by the rising curve of kilowatt-hour consumption. The modernization in this case included the replacement of windings of transformers to provide higher ratings and improved protection, and the replacement of parts of oil switches by oil-blast mechanisms to increase their rupturing capacity—in some instances as much as 300 per cent.

The maximum rating of waterwheel generators was increased to 82,500 kv-a. for two machines of this type for the Boulder Dam Power Station; the previous maximum rating being those of the 77,500-kv-a. units installed at Dnieprostroy, Russia.

While no new electrification work was undertaken by mainline steam railways in the United States, construction was continued on the equipment for the Pennsylvania Railroad electrification. There was considerable activity in the rehabilitation and improvement of the rolling stock of street railways to speed up schedules and a notable expansion in the use of the trackless trolley coach. Electrically operated automotive delivery trucks, and refrigerating units for installation on the chassis of conventional-type trucks and wagons, were also produced.

Of exceptional interest was the design by two railroads of three-car articulated stream-line trains for sustained high-speed operation. These trains will be electrically operated and air conditioned; the necessary power is provided by generators driven by internal combustion engines. They are characterized by light weight, which, combined with their stream lining, makes high speed attainable with relatively low horsepower.

An ingenious inductor telephone system was practically applied for the first time for communication while in motion between the head and rear end of long freight trains. It can also be utilized for messages between nearby trains or between trains and wayside points.

There was unusual activity in the development of motors, and a new type of variable-speed alternating-current machine, utilizing Thyratron tubes, was built and tested. A super-synchronous motor of record capacity was constructed and additional ratings were provided in machines intended for operation in gaseous atmospheres or other hazardous conditions.

A complete redesign of fractional-horsepower motors was effected which established common mounting dimensions for all types of these motors of a given output rating. For many applications, they were provided with ingenious elastic supporters to insure quiet operation.

The use of Thyratron control of resistance welding, both seam and spot, was extended, there being numerous new applications of this control for the welding of ordinary steel, stainless steel, and aluminum.

Improved performance was achieved in electric refrigeration for both domestic and commercial service, and some of the mechanisms were utilized in the development of air-conditioning equipment and notably in the production of a practical type of room cooler.

A number of electronic tubes of improved char-

acteristics and some of entirely new design were produced and applied for the control of a great variety of operations. Among the new units are a three-electrode tube having a 0.5 amp, current rating; a 100-amp, metal Phanotron; a vacuum-tube phototube; a two-electrode high-vacuum radiation-cooled Kenotron rectifier tube; and three-electrode water-cooled vacuum tubes of unusually small dimensions to obtain relatively high output power at very high frequency. Greater use was made of graphite as an anode material.

New applications of electronic tubes included their use as static frequency changers.

The most powerful x-ray tube so far utilized in practical service was rated 800,000 volts and applied in therapeutic work, and an industrial unit of 300,000-volt rating was designed for the x-ray inspection of fusion welds.

Transformers embodying revolutionary changes in design were made possible by the adoption of Pyranol, the new noninflammable synthetic insulating and cooling medium for use in place of the conventional transformer oil. A reduction of about one half was secured in the physical dimensions of these transformers. Pyranol was used also as a treating medium for capacitors, thereby effecting a reduction in volume of about one third as compared with previous designs.

Research work was continued actively throughout the year, lightning investigations were made both in the field and the laboratory to improve the continuity of electric service, and a 2,000,000-volt lightning generator was utilized for the commercial impulse testing of transformers. The chemical and physical characteristics of magnetic sheet steels were improved, and permanent magnet alloys of greatly increased strength were developed which made it possible to obtain new information in regard to the nature of magnetic phenomena.

Other research work covered such diverse fields as the improvement of alkyd resins and extending the field of their applications; the production of electronic tubes of increased capacity or improved sensitivity; the creation of new designs of fans giving increased air volume for a given power input with quiet operation; the design of automatic balancing machines; new applications of nonlinear circuits; and a study of the effects of radiation on the growth of plants.

The new meters and instruments evolved during the year included several which are unique. Among these were an improved type of mercury-vapor detector operating on a resonance radiation system which is about three times as sensitive as the previous type and will indicate if there is even one part of mercury in 100,000,000 parts of atmosphere; a recording flaw detector for steel tubing which will test such tubing up to $\frac{3}{4}$-in. outside diameter at the rate of 120 ft. per min.; and an ultraviolet meter which utilizes a direct-current amplifier, screen-grid tube, dry batteries, and a cadmium photocell.

For use in the tuning of radio receiving sets, a shadow instrument was devised, the variation in tuning being indicated by the narrowing or widening of a shadow cast by a magnetic vane on a ground-glass screen. There was also produced the world's largest spectroscope which not only can divide a light beam into a spectrum but also can select one wavelength of light from the spectrum and measure its power.

In the field of lighting, there were several developments of practical commercial value. A three-light lamp was designed which contains two filaments, each of which may be burned singly or in combination with the other, thus providing three different levels of illumination from a single lamp bulb. A new 2000-watt movieflood lamp facilitates the taking of motion pictures and is especially valuable for the latest color processes. There were also produced new photoflash lamps, one of which has a light output of $17\frac{1}{2}$ million lumens and made available more light than has ever before been contained within a single glass bulb.

Perhaps the most outstanding lighting development was the improvement effected in sodium-vapor lamps, which makes them practically applicable for economical highway illumination. While the light from these lamps, as at present developed, appears to be unsuitable for indoor lighting, it has already demonstrated the high visibility it can provide on roads. The fact that it is at least $2\frac{1}{2}$ times as efficient for a given current consumption as the tungsten lamp units heretofore used for this service indicates that it can facilitate the night traffic of our highways and at the same time greatly increase the factor of safety.

PASADENA SCHOOL WORK

Federal aid is being sought for school building improvements in Pasadena, including a grant of $100,000 for the Washington Elementary School and $110,000 for the Madison Elementary School. Bennett & Haskell, 311 First Trust Building, Pasadena, are the architects of the last named building.

TERMITES

By Arthur H. Memmler

Members of the architectural and structural engineering professions throughout this country, unless they have already done so, should thoroughly acquaint themselves with the study of termites. In my opinion, no state should be considered safe and free from the attack of these insects. It is believed by some that there would be no such danger in the colder climate. During the past summer I found their destructive work in the very northern part of Wisconsin.

We should learn of the varieties, the castes, the food habits, the grooming, and have a general biological information of these pests. We should know their ways well enough to recognize their presence without actually seeing them. As a matter of fact, an accurate and complete report on the condition of a wood structure cannot be made unless the habits of the termites are understood by the inspector.

Technical preparation for certification in these professions should include the subject of termite control. Courses in this new subject should be provided for practicing architects and engineers.

Architects should take the lead in the fight against this pernicious insect in the West and South, where the greatest variety and numbers are present.

Legal measures should cover preventative methods for new structures and the repair of infested ones. Persons selling or renting property infested with termites should be held legally responsible for the damage incurred.

Each individual structure should be particularly designed to avert this menace. It is the duty of the professions which captain the building industry to familiarize themselves thoroughly with this secretly working enemy of wood construction and to enlighten and protect the public.

FIFTY YEARS IN BUSINESS

According to Mervyn G. Zelinsky, Secretary of D. Zelinsky & Sons, Inc., contracting painters and decorators operating throughout the Pacific Coast, the year 1934 will be a busy one for this firm, which is rounding out fifty years of activity. They have fulfilled contracts aggregating many millions of dollars in practically every community on the Western Coast.

Among the most notable projects completed in 1933 were the Sixteen Million Dollar Acute Unit of the Los Angeles County Hospital, the Airship Hangar at the Sunnyvale Air Base and the Ammunition Depot at Oahu, T. H.

Contracts on hand by D. Zelinsky & Sons, Inc., at the beginning of the year, included 65 houses at Hamilton Field, Marin County, The Bohemian Club Building, in San Francisco, San Francisco City and County Jail, Marine Hospital at Seattle, Washington, and the Electric Storehouse and Machine Shop at Bremerton, Washington.

KEY TERMINAL ELECTRIFICATION

The study given by Kent & Hass, architects, to the Key terminal lighting problem, both from the standpoints of intensity of illumination and appearance of lighting fixtures, resulted in the choice of Holophane primatic glass reflectors of a type best suited to the specific conditions. The very favorable comment on the lighting (average better than six foot candles) and the decorative effect of the crystal glass units, has been ample justification of this selection. The facade of the ferry concourse building facing the slip is floodlighted and at night has the appearance of an arch supporting the Key System Neon sign, the ensemble effect standing out clearly for many miles over the waters of the bay.

Air heating for the offices and locker rooms is supplied by flush mounted electric wall type heaters. Water is electrically heated by a Wesix automatic electric heater. The installation also includes a complete sound signal and Telechron clock system.

The entire electrical installation was made by the Oakland office of the Scott-Buttner Electric Co. This firm, long established, is now completing from its San Francisco office an important contract for the electrical distribution system at Fort Mason.

HOTEL MODERNIZATION

The fifteen story Clift Hotel, San Francisco, is undergoing extensive remodeling from plans by G. A. Lansburgh, architect, 140 Montgomery Street, San Francisco. The hotel will be closed for a period of three months during alterations.

RESIDENCE ALTERATIONS

A contract has been awarded to Charles Stockholm and Sons, Russ Building, San Francisco, for $53,200 for extensive alterations and additions to the Paul I. Fagan house in Hillsborough. Arthur Brown, Jr., is the architect.

ART IN AMERICA

A National Radio Program

Initiated by the General Federation of Women's Clubs and organized under the auspices of the American Federation of Arts under a grant from the Carnegie Corporation of New York with the cooperation of the National Advisory Council on Radio in Education, a national radio program on Art in America will be inaugurated over a coast to coast network beginning Febuary 3. The program will be divided into two series, the first of which, covering American art up to 1865, has been prepared with the cooperation of the Art Institute of Chicago and the Metropolitan Museum of Art. The second series, to be broadcast in the fall of 1934, will cover the period from 1865 to the present and will be prepared with the cooperation of the Museum of Modern Art.

February 3—1. Painter Reporters of the World

The adventures and discoveries of Captain John Smith, Sir Walter Raleigh, Champlain and other explorers of the Sixteenth Century as depicted by artist members of their expeditions. While most of the original paintings are lost, a record of their work has been preserved in the engravings that illustrate De Bry's *India Occidentalis*, Champlain's *Voyages* and other books printed in Europe.

February 10—2. The Early Settlers and Their Homes

Life in the first settlements of Massachusetts, New Amsterdam and Virginia in the Seventeenth Century as reflected in architecture, furniture and the household arts.

February 17—3. The First American Portrait

The work of Seventeenth and early Eighteenth Century itinerant painters such as Jeremiah Dummer, the earliest American-born painter, Gustavus Hesselius, John Snibert, Robert Feke, Jeremiah Theus, John Woolaston, Joseph Blackburn and Robert Edge Pine.

February 24—4. How They Lived in Colonial America

Architecture, furniture and the minor arts up to the Revolution, contrasting life in the northern and southern colonies during the Eighteenth Century.

March 3—5. John Singleton Copley, Our First Eminent Painter

The life and works of Copley, our first native painter of importance, from the time he established himself as a portraitist in Boston to his departure for England in 1774.

March 10—6. The Background of American Art

A survey of Colonial art and its sources.

March 17—7. An American Studio in London

The life and works of Benjamin West and of the young Americans who received their training in his school in London, Mathey Pratt, Charles Willson Peale, Fulton, Morse, Trumbull, Stuart, Washington, Allston and Rembrandt Peale.

March 24—8. Peale and His Museum

The life and works of Charles Willson Peale, painter, taxidermist and dentist, who started the first museum in the north and instigated the first art school in America.

March 31—9. Gilbert Stuart and the Washington Portraits

The life and works of Gilbert Stuart, emphasizing the period after his return to America to paint Washington, the success of his later years as the leading portrait painter of the Republic, and his influence on the young men of his time.

April 7—10. The Classic Arts of the Young Republic

Classicism, which had influenced the whole Eighteenth Century, comes to an end in the early years of the Republic. The younger pupils of West and Vanderlyn, trained in France, return with high hopes of a national art. Trumbull produces his historical paintings for the new Capitol and the city of Washington is created.

April 14—11. Jefferson, Last of the Gentlemen Builders

Public architecture at the end of the Eighteenth Century and the beginning of the Nineteenth, including the work of Bullfinch, Mills, Strickland, Hoban, Latrobe, Thornton and Thomas Jefferson, and covering the Roman and Greek revivals.

April 21—12. The First American Sculptors

The history of American sculpture from the wood carvings of William Rush to the Italianate sculptures of Horatio Greenough and Hiram Powers and the American school which they established in Florence.

April 28—13. Steamboat Gothic and Romanticism

Early Nineteenth Century architecture, furniture and household arts culminating in the Gothic revival and the Romantic movement. Development of a new phase of American art in the Middle West centering around the river steamboat.

May 5—14. The Hudson River School and Its Heirs

Thomas Doughty, and Thomas Cole, painting the Hudson valley, as pioneers of a native school of landscape which was carried west by Kensett, Church and Bierstadt. The end of the tradition of Colonial painting and the beginning of a new style after the Civil War.

May 12—15. One Hundred Years of Picture Collecting

A history of the Goodwins, a fictitious American family and their activities as collectors and art lovers, revealing the changes and developments in the taste of the public during the last century.

« « « « With the Architects » » » »

ARCHITECTS NAMED

The following architects have been tentatively retained by the Oregon State Board of Control for projected work under the Public Works building program:

Tuberculosis Hospital—J. N. Wicks, Astoria, and Harry A. Herzog, Guaranty Building, Portland, architects; $360,000.

State Library, Salem—Whitehouse, Stanton & Church, Railway Exchange Building, Portland, and Lyle Bartholomew, Salem, architects; $300,000.

Salem School for the Blind—Strubel & Legge, Salem, architects; $300,000.

Psychopathic Hospital, Portland — Lawrence, Holford & Allyn, Failing Building, architects; $300,000.

State Penitentiary improvements, Salem—Sutton & Whitney, Lewis Building, Portland, architects; $290,000.

SAN JOSE AUDITORIUM

The Federal government has approved a grant of $112,000 toward the cost of a Municipal Auditorium to be built on the old Park Hotel site in San Jose. The ground has been donated to the city by one of its citizens and a bond election will be held February 13th to vote $275,000 additional toward the cost of the building. Preliminary plans for the structure have been drawn by Binder & Curtis, local architects.

HOUSING PROJECT

Federal aid has been sought for an ambitious housing project near Redwood City, California. A private corporation has applied for a $2,000,000 loan for the purpose of improving 100 acres facing Woodside Road with five-room homes, landscaped and gardened, recreation field, swimming pool, etc. Douglas D. Stone is the architect.

CHURCH ALTERATIONS

Alterations to cost about $20,000 will be made to the edifice of the Congregation Beth Sholan at 14th Avenue and Clement Streets, San Francisco. F. W. Dakin, 625 Market Street, San Francisco, is the architect, and F. W. Hellberg, structural engineer.

TO MODERNIZE HOTEL

The historical Shasta Springs Hotel is to undergo modernization this year. Plans are being prepared by Shaw & McCool, architects, 9 Geary Street, San Francisco, for the improvements, which will include a new dining room wing and a number of cottages. This property is owned by the Shasta Water Company.

The same architects are also preparing preliminary drawings for a reinforced concrete playhouse in Burlingame for the Green Players. This project, which will entail an expenditure of $60,000 or more, is now in the promotional stage.

MOTION PICTURE STUDIO

Marshall P. Wilkinson, Hollywood Security Building, Los Angeles, is preparing plans and specifications for a frame and concrete motion picture studio to be built at Romaine and Las Palmas Streets, Los Angeles, for the General Service Studios. There will be five stages, four bungalows and an auditorium. The cost is estimated at $450,000.

W. H. WEEKS BUSY

New work in the office of W. H. Weeks and Harold Weeks, Underwood Building, San Francisco, includes an addition to the Science Building, Ceres Union High School, a new gymnasium for the Le Grande High School, additions to the high and grammar schools at Hollister, and an addition to the Santa Clara High School.

STORE AND OFFICE BUILDING

Julius E. Krafft & Sons, architects, Phelan Building, San Francisco, have prepared plans for a Class A store and office building on the north side of 16th Street, between Lincoln and Valencia, for William F. Schlosser. Contracts have been let and construction will go forward immediately. Improvements will cost $50,000.

OAKLAND STORE BUILDING

Ray F. Keefer, 770 Wesley Avenue, Oakland, has awarded a contract for a one story, Class C, reinforced concrete store building on Lakeshore Avenue, Oakland, estimated to cost $5500.

CERTIFICATES REVOKED

Following is a list of those persons whose certificate to practise architecture in the State of California were automatically revoked on December 30, 1933, for non-payment of the annual license fees, according to a statement under date of January 1, issued by the California State Board of Architectural Examiners:

Harold Harte Keyes, Manila, P. I.
Bernard H. Prack, Pittsburgh, Pennsylvania.
F. Wilbur Griffin, Ames, Iowa.
J. W. Woollett, Sacramento, California.
F. J. De Longchamp, Reno, Nevada.
John Eberson, New York City, N. Y.
M. P. Renfro, San Bernardino.

The following certificate to practice architecture was cancelled due to death of the architect:

PERSONAL

Victor N. S. Jones, junior member of McClelland and Jones, Republic Building, Seattle, has been named member of the building committee of the Washington Construction League. He succeeds Harlan Thomas, who resigned in order to take his wife on a trip south for her health.

Andrew P. Hill, formerly with the Division of School House Planning, State Department of Education, is now associated with Messrs. Allison & Allison, architects of Los Angeles, who have more than $1,000,000 in school work in their office.

Thomas Edwards and Thomas Pring, architects, have moved their offices to No. 9 Geary Street in the Mutual Bank Building, San Francisco.

George M. Rasque, architect, of Spokane, has been appointed a member of the Washington State Board of Architectural Examiners.

Alfred C. Williams, architect, has returned to San Francisco after a year spent in department store planning at Portland, Oregon.

J. Lister Holmes has moved into larger quarters at 406 New World Life Building, Seattle.

LOS ANGELES UNION DEPOT

John and Donald B. Parkinson, 808 Title Insurance Building, Los Angeles, have been commissioned as architects of the new Union Passenger Station in Los Angeles. Alternate schemes for the buildings will be submitted to the railroad officials. The entire project will represent an expenditure of $8,500,000.

HILLSBOROUGH RESIDENCE

A $10,000 home will be built in Hillsborough for J. H. Howard from plans by Willis Polk & Company, A. MacSweeney, architect.

THIS IN AN ARCHITECTURAL AGE!

To take the place of structures condemned as earthquake hazards, 3000 Berkeley school children started the first of the year in canvas tents.

The temporary tent structures will be used at the Garfield Junior High School and the Lincoln and Longfellow Elementary Schools, condemned for use because they are not earthquake proof.

There are twenty-three tent houses at Garfield, eight at Lincoln and ten at Longfellow. Each of the tents is 24 by 36 feet and designed to house a class of from 30 to 45 students. The structures have wooden frames, wooden floors and wooden sidewalls four feet high.

Above the sidewalls the structures will be covered by canvas and there will be a double canvas roof with a dead air space between the two roofs. Steam will be piped from the school heating plants.

LLOYD A. RALLY

Lloyd A. Rally, architect, died suddenly at his home, 5106 Franklin Avenue, Los Angeles, Tuesday morning, December 12, of heart disease. He was 51 years of age. Mr. Rally had been engaged at the headquarters of the Civil Works Administration checking plans for projects submitted for approval by the advisory board and was on duty the day before his death. Mr. Rally was architect of the Edgewater Beach Club and many other buildings, including several schools. He came to Los Angeles from San Francisco where he was engaged in the practice of his profession following a period of employment in the office of the late John Galen Howard. Mr. Rally is survived by the widow, Jeanne Y. Rally, and a daughter, Janet E. Rally.

WILL SUPERVISE PUBLIC WORK

Edwin Bergstrom and Gordon B. Kauffman have been named supervising architects for Los Angeles county buildings erected with Federal aid. They will receive a fee of 1 per cent on the cost of construction for their services. Designing of buildings will be assigned to different groups of architects.

BERKELEY BUILDING ALTERATIONS

James W. Plachek, architect, Mercantile Bank Building, Berkeley, has completed plans for alterations to the third and fourth floors of the Corder Building at Bancroft Way and Shattuck Avenue, Berkeley. The two floors are to be occupied by the Federal Land Bank.

SAN ANSELMO RESIDENCE

Hervey P. Clark, architect, Shreve Building, San Francisco, has prepared plans for a $15,000 residence to be built in San Anselmo for Dr. Mary H. Layman.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.

Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—

Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 plus cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 83.00 per M
4x12x12 in.	91.00 per M
6x12x12 in.	119.00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 91.00
6x12x5½	70.00

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.

Mosaic Floors—80c per sq. ft.

Duraflex Floor—23c to 30c sq. ft.

Rubber Tile—50c per sq. ft.

Terazzo Floors—45c to 60c per sq. ft.

Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton.

No. 3 rock, at bunkers.....$1.65 per ton
No. 4 rock, at bunkers..... 1.65 per ton
Elliott top gravel, at bnkrs. 1.75 per ton
Washed gravel, at bunkrs 1.75 per ton
Elliott top gravel, at bnkrs. 1.75 per ton
City gravel, at bunkers.... 1.40 per ton
River sand, at bunkers..... 1.50 per ton
Delivered bank sand..... 1.10 cu yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND

Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b. Job, S. F.) $2.45 per bbl.
Cement (f.o.b. Job, Oak.) $2.45 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 22.00 per M.
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—

Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—

Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—

Sand, 40 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—

Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—

Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 70c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per square foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—

Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

Common, $28.00 per M (average).
Common O.P. select, average, $34.00 per M.

1x6 No. 3—Form Lumber	$20.00 per M
1x4 No. 1 flooring VG	50.00 per M
1x4 No. 2 flooring	44.00 per M
1x4 No. 3 flooring	32.50 per M
1x6 No. 2 flooring	46.00 per M
1¼x4 and 6 No. 2 flooring	55.00 per M

Slash grain—

1x4 No. 2 flooring	$44.00 per M
1x4 No. 3 flooring	38.00 per M
No. 1 common run T. & G.	36.00 per M
Lath	5.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ .90 per bdl.e
Redwood, No. 2	.70 per bdle.
Red Cedar	.85 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple.....$120.00 M ft.
1 1-16x2¼" T & G Maple ..... 132.00 M ft.
⅞x3½ sq. edge Maple ..... 140.00 M ft.

	13-16x2¼" T&G	⅝x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.00
2 ply per 1000 ft .roll	4.25
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	10.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.25 base.
Sash weights, $45 per ton.

Millwork—

O. P. $90.00 per 1000. R. W., $96.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $6.50 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.00 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $5.00 each.
Dining room cases, $6.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $10.00 per M.
For smaller work average, $25 to $32 per 1000.

Marble—(See Dealers)

Painting—

Two-coat work ..... 29c per yard
Three-coat work .....40c per yard
Cold Water Painting .....10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.40
2 coats, lime mortar hard finish, wood lath	.50
2 coats, hard wall plaster, wood lath	.50
3 coats, metal lath and plaster	.90
Keene cement on metal lath	1.10
Ceilings with ¾ hot roll channels metal lath	.65
Ceilings with ¾ hot roll channels metal lath plastered	1.30
Shingle partition ¾ channel lath 1 side	.60
Single partition ¾ channel lath 2 sides 2 inches thick	2.00
4-inch double partition ¾ channel lath 2 sides	1.20
4-inch double partition ¾ channel lath 2 sides plastered	2.25

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.60
3 coats Medusa finish No. 18 gauge wire mesh	2.90

Wood lath, $4.00 per 1000.
2.5-lb. metal lath (dipped) .17
2.5-lb. metal lath (galvanized) .20
3.4-lb. metal lath (dipped) .22
3.4-lb. metal lath (galvanized) .23
3/4-inch hot roll channels, $72 per ton.
Finish plaster, $16.40 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $43.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—

From $55.00 per fixture up, according to grade, quantity and runs.

Roofing—

"Standard" tar and gravel, $5.50 per square for 30 squares or over.
Less than 30 squares, $5.75 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—

Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware. $2.00 per sq. ft.

Skylights—

Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural

$95 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $87.00.

Steel Reinforcing—

$85.00 per ton, set, (average).

Stone—

Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—

Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All Classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

SAN FRANCISCO SCHOOL PROGRAM

San Francisco in December approved a bond issue of $3,000,000 for the construction of new school buildings and replacement of some of the older structures. The following schools, with the amounts to be expended on each, are included in the program. Plans will be prepared either by Mr. Sawyer, City Architect, or private achitects to be appointed. The entire program is, of course, dependent upon a 30% Federal grant:

Glen Park Elementary School, Bosworth Street and Brompton Avenue, $300,000.

Agassiz Elementary School, 22nd and Bartlett Streets, $175,000.

Sunshine Elementary School, Dolores and Dorland Streets, $115,000.

Buena Vista Elementary School, 18th and Bryant Streets, $200,000.

Visitacion School, Visitacion Avenue and Sherwin Street, $250,000.

Star King Elementary School, 25th and Utah Streets, $96,000.

Irvin M. Scott Elementary School, Tennessee and 22nd Streets, $75,000.

Patrick Henry Elementary School, 18th and Vermont Streets, $85,000.

Francis Scott Key School, 42nd Avenue and Irving Street, $100,000.

George Washington High School, 31st Avenue and Geary Street, $1,200,000.

Lawton Elementary School, 20th Avenue and Lawton Street, $100,000.

An additional $500,000 has already been set aside in the School Department budget for structural changes required by the new State law to the following buildings:

Redding Elementary School, Pine and Larkin Streets, $215,000.

John Swett Jr. High School, McAllister, near Gough Street, $100,000.

Girls High School, Geary and Scott Streets, $100,000.

Daniel Webster Jr. High School, 20th and Mission Streets, $85,000.

BOND ISSUES FAIL

Eight Oakland bond issues, aggregating $2,782,000, were defeated in the December election. The proposition included $802,000 for a new library; $700,000 for sewers, and $750,000 for Moss Avenue approach to the San Francisco-Oakland Bridge. In Alameda County the $1,712,000 bond issue for a new county court house was also defeated.

In Piedmont a bond issue of $233,000 for new school buildings was voted down; in the city of Alameda a bond issue of $448,000 for new schools was defeated, and in Albany a bond issue of $150,000 was lost.

U. C. EXTENSION COURSES

Plans have been completed for the opening of 248 new courses of instruction for adults in the Bay region during January and February under the direction of the University of California Extension Division, Professor Leon J. Richardson, Director.

Schedules of classes, outlining the new courses, are now available and may be had by communicating with any of the Extension Division offices: In San Francisco, 540 Powell Street; in Oakland, 1730 Franklin Street; and in Berkeley, 301 California Hall.

Although most courses are given in the evening a number of new courses will also be inaugurated during the morning and afternoon hours. It is pointed out that the first meeting of any class is open to all interested, so that the prospective students may learn the scope of the lectures and instruction.

Persons desiring to take advantage of the facilities offered by the State University are asked to write the Extension Division for detailed information.

Among the new classes starting at 540 Powell Street, San Francisco, are the following:

Course—Art Appreciation; Instructor—Mrs. Hamilton A. Wolf; Jan. 10
Course — Modern French Painting; Instructor — Mrs. Jane B. Howard; Jan. 17
Course—The Art of Interior Decoration; Instructor—Mr. E. A. Hunt; Jan. 11
Course—Art Appreciation; Instructor—Mr. Hamilton A. Wolf; Jan. 11
Course—Modern French Painting; Instructor—Mrs. J. B. Howard; Jan. 15
Course—An Outline of Chinese Art and Culture; Instructor—Dr. Henry H. Hart; Jan. 17
Course—Art Analysis (Photographers); Instructor—Mr. Wolf; Jan. 10
Course Art Analysis; Instructor—Mr. Wolf; Jan. 11
Course—Art Analysis (Photographers); Instructor—Mr. Wolf; Jan. 10.
Course—Interior Decoration; Instructor—Mr. Horace J. Powers; Jan. 11
Course—Interior Decoration; Instructor—Mr. Powers; Jan. 11

Courses at 1730 Franklin Street, Oakland, include:

Course—Design and Color; Instructor—Miss Emma J. McCall; Jan. 8
Course—Art Appreciation; Instructor—Mr. Hamilton A Wolf; Jan. 8
Course—Art Appreciation; Instructor—Mr. Wolf; Jan. 8
Course — Pictorial Block Printing; Instructor — Mr. William S. Rice; Jan. 16
Course—Etching; Instructor—Mr. C. O. Horton; Jan. 11
Course—Commercial Art; Instructor—Mr. Horton; Jan. 11
Course — The Art of Interior Decoration; Instructor — M. E. A. Hunt; Jan. 10
Course—Modern Interior Decoration; Instructor—Mr. Hunt; Jan. 12

Courses at Wheeler Hall, Berkeley, include:

Course—An Outline of Chinese Art and Culture; Instructor—Dr. Henry H. Hart; Thurs. 8 P.M.; Jan. 18
Course—Engineering Drawing XL D; Instructor—Mr. Joseph S. Blum; Wed. 7 P.M.; Jan. 17
Course—Vacuum Tubes and their Industrial Uses; Instructor—Assoc. Pro. L. E. Renkema; Mon. 7:30 P.M.; Jan. 15

HORSE RACING PLANT

Stillman W. Curtis, 430 Natoma Street, San Francisco, is preparing plans for a horse racing plant to be built on the Curtis Air Field, Beresford, San Mateo County, for the California Jockey Club, of which Peter B. Kyne, the author, is president, and William P. Kyne is general manager. A permit to build and operate the plant has been granted the club by the California State Racing Commission. Approximately $350,000 will be expended on the project.

Chapter and Club Meetings

SOUTHERN CALIFORNIA CHAPTER

Officers for 1934 were elected at the regular monthly meeting of the Southern California Chapter, American Institute of Architects, held at the University Club in Los Angeles December 12. The new officers are: Sumner Spaulding, president; Ralph C. Flewelling, vice-president; Eugene Weston, Jr., secretary; Leland F. Fuller, treasurer, and Reginald D. Johnson, director for the three-year term. The hold-over directors are Roland E. Coate and Carleton M. Winslow.

Delegates and alternates to the national convention of the Institute were elected as follows: A. M. Edelman, Roland E. Coate, Robert D. Farquhar, Myron Hunt and J. E. Allison. Alternates—Henry Carlton Newton, G. Stanley Wilson, Samuel E. Lunden, Claud Beelman and Robert Murray.

Considerable discussion developed over the program for competition on public buildings, submitted by the special committee appointed at the November Chapter meeting to draft the program. A motion was made to adopt the program but this was withdrawn in favor of a substitute motion to distribute copies of the document to all Chapter members for study preliminary to disposal of the matter at an early meeting. The substitute motion carried. A motion placing the Chapter on record as favoring competitions on city and county building projects was adopted.

Gordon B. Kaufmann, outgoing president of the Chapter, appointed an auditing committee consisting of A. M. Edelman, William Richards and H. Roy Kelley.

OREGON CHAPTER HONORS PARKER

A special meeting of Oregon Chapter was held in the Pacific Building, Portland, December 11. Those present were Messrs. Crowell, Belluschi, Aandahl, Webber, Jones, Parker, Doty, Stanton, Hemenway, Newbeury, Schneider, Logan, Linde, Jacobberger, Sundeleaf, Brockman and Howell.

The meeting was called by the executive committee to consider and take action with reference to a telegram received from Thos. C. Vint, relative to the C.W.A. project for historic monuments survey.

Mr. Vint's telegram was read and discussed.

Mr. Stanton moved that the Chapter nominate a member for District Officer, send his name to Washington D.C., and contact Washington State Chapter for their approval. The motion was seconded by Mr. Sundeleaf and carried. Wm. Stanley Parker was then unanimously nominated for the position.

S. F. ARCHITECTURAL CLUB

The San Francisco Architectural Club, on the evening of Friday, December 8th, celebrated its 33rd anniversary. Those who were unable to be present missed a reat treat, as the affair was one of the most enjoyable events of the season.

Many local architects, their wives and friends, as well as the builders, were present. The event took the form of a dinner-dance at Bal-Tabarin and was described as the Beaux Arts Frolic, with the theme of the evening, "A Night in Paris." A revue, consisting of specialty numbers in pageant form, with dance music by Tom Guren's Century of Progress Orchestra, featured the spectacular entertainment. The ballroom and dining hall were elaborately decorated under the talented direction of Harold Wagner. The success of the affair was due largely to the work of Donnell Jackle, Edward Counter, the newly elected president and the other officers of the club.

The following are the new officers for this year: President, Edward Counter; Vice-President, Otto Hintermann; Treasurer, Sterling Carter; Secretary, H. Walter Ruppel.

ENGINEERS HEAR ILLUSTRATED TALK

An interesting meeting of the San Francisco Structural Engineers Association was held at the Engineers Club January 9th when the speaker of the evening was B. M. Brock of the Columbia Steel Company, who gave an illustrated talk on "Modern Rolling of Structural Steel." There was a large attendance from the Bay section and a number came from Sacramento and other outlying districts.

NEW YEAR'S LUNCHEON

On Saturday, December 31 the officials of Gladding, McBean & Co. were hosts to a hundred or more architects, engineers and contractors at the company's offices, 560 Market Street, San Francisco. The fifth floor was the general rendezvous, while a buffet luncheon was served on the fourth floor. The executives of Gladding-McBean proved very gracious hosts and New Year's greetings were passed on in a friendly and optimistic spirit.

With the Engineers

WISH SURVEYS CONTINUED

At the last meeting of the Structural Engineers Association of Northern California, John B. Leonard, head of the Bureau of Building Inspection, San Francisco, briefly reviewed the accomplishments of the survey on parapet walls recently completed at the instigation of the San Francisco city authorities. The meeting passed a resolution calling upon Mayor Rossi to continue the appropriation for inspection of parapet walls, fire escapes, tank structures, etc.

The resolution is as follows:

WHEREAS, The Bureau of Building Inspection of the City and County of San Francisco is conducting, pursuant to Bill No. 406, Ordinance No. 9.05184, a survey of dangerous parapet walls, fire escapes, balconies and other features which might become a hazard to people on the sidewalks, in the event of a severe earhquake, and

WHEREAS, The survey has shown that seventy-four per cent of the three hundred forty buildings investigated to date require correction to reduce or eliminate this hazard, and

WHEREAS, The owners of buildings, in spite of the expenditure involved, have shown a desire to cooperate in improving this situation, as is evidenced by the fact that over one hundred fifty repairs already are being planned or are under way and

WHEREAS, The appropriation under which the survey is being conducted shortly will become exhausted.

Now therefore be it Resolved, That the Structural Engineers Association of Northern California in regular annual meeting assembled in San Francisco on December 13, 1933, does hereby urge, in the interest of public safety, that an appropriation of not less than five thousand dollars ($5,000) be made for the purpose of continuing the survey of dangerous parapet walls, fire escapes, balconies and other hazards, and that a copy of this resolution be sent to the Mayor of the City and County of San Francisco.

STRUCTURAL ENGINEERS MEET

At the annual meeting of the Structural Engineers Association of Southern California, the following officers were elected:

President, R. V. Labarre; Vice-President, Murray Erick; Secretary-Treasurer, Donald F. Shugart, 170 North Vermont Avenue, Los Angeles.

Directors — George J. Carroll, Murray Erick, Paul E. Jeffers, R. V. Labarre, D. L. Narver, Prof. R. R. Martel, and Blaine Noice.

These officers were installed at the meeting held January 3.

SAN FRANCISCO ENGINEERS BUSY

Structural engineers throughout California are taking a prominent part in the investigations of public buildings with reference to their safety against earthquake shocks, in compliance with the new state law.

One committee composed of E. L. Cope, Walter Huber, H. J. Brunnier, and L. H. Nishkian has reported on eight San Francisco school buildings and is at work on a report affecting five other buildings.

Will P. Day, Harry C. Vensano, Alfred Fisher, Earle Russell and Jesse Rosenwald have been delegated to investigate the condition of five other school buildings and the committee's report is expected to be filed shortly.

C. H. Snyder's office is now busy on plans for correcting structural needs in two school buildings; H. J. Brunnier, one school building and L. H. Nishkian, one school building, the latter, the Girls' High School, which will have to undergo extensive changes in masonry construction. H. A. Minton is the architect.

MAKING SCHOOL SURVEY

In Berkeley an estimate has been ordered by the Board of Education of the cost of rehabilitating school buildings condemned by the State Department of Engineering. This committee is composed of Bakewell & Weihe and Eldridge T. Spencer, architects, and Thos. Chace, structural engineer, of Berkeley.

W. L. Huber has been commissioned to make a report on the condition of the Palo Alto High School.

ENGINEER HAS SCHOOL WORK

H. B. Hammill, structural engineer, 381 Bush Street, San Francisco, has been commissioned to prepare plans and specifications for changes in the San Mateo High School, the Burlingame High School, and the San Mateo Industrial and Applied Arts Building. A bond election, to provide the necessary funds for the remodeling work, was successful.

CONCRETE BRIDGE

J. B. Pratt, district engineer, has prepared plans and will supervise construction of a reinforced concrete bridge over Russian River, near Monte Rio. The work is to be segregated instead of by general contract. The bridge will cost $100,000.

ENGINEERS ELECT OFFICERS

The Structural Engineers Association of Northern California has elected the following officers for 1934:

President—C. H. Snyder.

Vice-President—Walter Dreyer.

Secretary-Treasurer—A. V. Saph, Jr.

Directors—H. B. Hammill and J. H. Hjul.

The Association, at its last meeting, endorsed the report of the Southern Section, setting forth the advantages of and recommending the use of structural grade reinforcing steel. The report was made at the request of the State Chamber of Commerce.

The following new members were taken in: M. W. Sahlberg, H. C. Vensano and A. M. Nishkian.

ENGINEERS' 1934 COMMITTEES

The Structural Engineers' Association of Northern California has appointed the following standing committees for 1934:

Program Committee: H. C. Powers, Chairman; W. Adrian, T. P. Dresser, Jr., Jesse Rosenwald, Kaj Theill.

Membership Committee: J. G. Wright, Chairman; R. D. Dalton, J. J. Gould.

Professional Activities and Welfare Committee: A. W. Earl, Chairman; M. C. Collins, H. B. Hammill, C. H. Kromer, H. C. Vensano.

Publicity Committee: J. H. Hjul, Chairman; W. E. Emmett, William Lotz, W. H. Popert.

Legislative Committees C. H. Kromer, Chairman; J. R. Shields, D. C. Willett.

Building Code Committee: J. B. Leonard, Chairman.

Building Congress: C. H. Snyder, Rep.; L. H. Nishkian, Alternate.

Fees and Services: E. L. Cope, Chairman; (To be selected by Chairman).

Telephone Company Directory Classification: E. L. Cope.

N. R. A. Code Committee: Jesse Rosenwald, Chairman; E. L. Cope, L. H. Nishkian.

Fees for School Repair: J. B. Leonard, Chairman; H. J. Brunnier, A. W. Earl, Jesse Rosenwald, Earle Russell.

OAKLAND BREWERY ADDITION

Plans have been completed for a three story, steel frame, reinforced concrete addition to the Golden West Brewery, 7th Street, Oakland. A. R. Williams of San Francisco, is the architect, and W. Adrian, structural engineer.

AN ENGINEER'S PROBLEM

The San Francisco section of the American Society of Civil Engineers and the Structural Engineers Association of Northern California, have received the following communication from the South of Market Street Property Owners Association, C. L. Tilden, president, and Jesse Coffee, secretary.

"The San Francisco Bay Bridge is of the greatest importance in the future development of San Francisco and upon the proper handling of the Automotive and Commuter traffic rests the success of this project and the wonderful development of our city, or if improperly planned, then the hopeless congestion of our streets.

"This is the problem of the engineer and not the layman and as at various times in the past the engineering societies have shown commendable public spirit in furthering civic betterments; therefore, we request the above named societies to appoint committees not to make a detailed report or study, but to lay down fundamental principles and establish criteria to be used by the public as a basis upon which to judge the merits or demerits of various suggestions which have been made or will be made for the solution of the traffic and terminal problems of the Bay Bridge.

"The South of Market Street Property Owners' Association will be glad to cooperate with you in any manner you may suggest."

The following committee was appointed to report on the above communication: Messrs. Jos. H. Hjul, Walter Dreyer, E. L. Cope, and L. H. Nishkian.

ENGINEER DESIGNS BREWERY

Warren E. Murray, structural engineer, 906 Hayes Street, San Francisco, has completed drawings for a new plant for the Milwaukee Brewing Company at 10th and Bryant Streets. A contract was let during the month for 375 tons of structural steel. Bids for the superstructure will be taken shortly.

STORE BUILDING

Ellison & Russell, structural engineers in the Pacific Building, San Francisco, prepared the plans for a one story Class C store building which J. Wallace will build on Sutter Street, east of Hyde, San Francisco, for the Safeway Stores. About $10,000 will be expended.

SAN JOSE AUTO SALES BUILDING

Louis C. Normandin will spend $60,000 in the construction of a one story reinforced concrete auto sales building and garage on West Santa Clara Street, San Jose, from plans by Frank W. Moore, structural engineer.

SIXTY CITIES SELECTED FOR REAL PROPERTY INVENTORY

MORE than 11,000 men and women in 60 cities will be taken from the unemployment rolls throughout the country to carry out the work involved in the Real Property Inventory recently authorized by the Federal Civil Works Administration. Plans are well under way for this project which must be completed by February 15, according to Willard L. Thorp, Director, Bureau of Foreign and Domestic Commerce, who will supervise the work.

The first objective of the plan is to afford work for a large number of unemployed professional and technical men and women embraced in the "white collar" class throughout the country.

In addition to putting to work immediately a large number of persons, there are many sound reasons for the immediate initiation of such a Real Property Inventory on a national scale. It will determine clearly the present condition and adequacy of our housing facilities. This in turn will aid in the program of stimulation of the construction industries.

A special organization composed of technical men of wide experience has been organized in Washington to handle the project. The Bureau of the Census is undertaking the organization of the field work, drawing men from the unemployment rolls in the cities in which the inventory is to be conducted.

"The maintenance of balance in employment," said Mr. Thorp, "is the most important problem facing the country today; it is difficult to accomplish this end without detailed information on the many aspects of our economic system. Business men must be able to act on knowledge as far as possible and not speculate about the steps they are about to take. In the real estate and building fields this is glaringly illustrated in many parts of the country, where there have been periodic phases of over-building, with no definite planning, no information as to whether or not there was a market for the buildings, whether population trends favored, or whether wages and salary totals were sufficient. As a consequence, we have often proceeded to a point far out of balance. This happened in enough communities to affect the entire country, a most important contributing factor to the depression."

Continuing Mr. Thorp stated that The Real Property Inventory will go a long way towards remedying past difficulties, for it will afford actual knowledge of local conditions in detail, before any group of men embark upon a campaign of building or real estate development.

"This will be of equally great importance to the government in endeavoring to dispel the depression, he said. The great good to be derived from such a program will be lasting, and it is in line with the policy of the government to plan carefully for the future. It will enable private initiative, guided by real property inventories, to save itself from disastrous errors. The Government is very much interested in pooling of vital information as a safeguard and guide to all businesses, for real property is the largest class of capital investment in the nation."

The schedules covering the complete range of information to be collected in this inventory have been practically completed and will be in the hands of the local enumerators within a few days. This information covers a wide range of subjects dealing primarily with residential property.

Included in the information will be data showing the condition of the property with regard to repairs and improvements, the number of vacant properties of both houses and apartments, the number of families that have doubled up because of the depression, the physical character of the structures, the equipment installed, and information of a similar character.

It will also show the average current rental which can then be compared with Census data for 1929. The range of basic facts and figures is wide and is believed essential in establishing for the guidance of the public, the building industry, and the Government, the exact status of the housing situation as it exists in this country today.

Among the cities that so far are included in the Real Property Inventory are the following:

REAL PROPERTY INVENTORY
CITIES TO BE COVERED

Alabama
Birmingham, Metropolitan District
Arizona
Phoenix
Arkansas
Little Rock, Metropolitan District

BUILD WELL—

A PROPERLY designed and well built building is a credit to any city and a worth while investment for its owner.

Such structures are the STANDARD OIL BUILDING, MATSON BUILDING, FOUR-FIFTY SUTTER STREET, STOCK EXCHANGE, S. F. BASE BALL PARK, MILLS TOWER, OPERA HOUSE and VETERANS' MEMORIAL and other notable structures — all built or supervised by —

Lindgren & Swinerton, Inc.

Standard Oil Building
San Francisco

NEW YEAR RESOLUTION FOR ARCHITECTS

¶That in frame construction we will give more consideration to the quality of building paper used;

¶That we will specify a tough waterproof building paper that will last as long as the house itself;

¶That said paper, under sufficient strain, will stretch and due to its resiliency will adjust itself to shrinkage which occurs in any building;

Therefore be it resolved: That we will specify . . . .

BROWNSKIN
Resilient Waterproof Building Paper

Manufactured By

ANGIER CORPORATION
Framingham, Mass.

PACIFIC COAST DISTRIBUTORS
BARNES CORNING COMPANY
DOuglas 6810
30 STERLING STREET SAN FRANCISCO, CALIF.

Oakland Portland Seattle Los Angeles

California
San Diego, Metropolitan District
Sacramento, Metropolitan District
Colorado
Pueblo
Connecticut
Waterbury, Metropolitan District
Delaware
Wilmington, Metropolitan District
Florida
Jacksonville, Metropolitan District
Georgia
Atlanta, Metropolitan District
Idaho
Boise
New Jersey
Trenton, Metropolitan District
New Mexico
Albuquerque
Santa Fe
New York
Syracuse, Metropolitan District
Binghamton, Metropolitan District
North Carolina
Ashville
Greensboro
North Dakota
Fargo
Ohio
Cleveland, Metropolitan District
Zanesville
Oklahoma
Oklahoma City, Metropolitan District
Oregon
Portland, Metropolitan District
Pennsylvania
Erie, Metropolitan District
Williamsport
Rhode Island
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BRICK VENEER GYMNASIUM

Plans for a reinforced concrete and brick veneer gymnasium for the Santa Rosa Junior College have been completed by William Herbert and C. A. Caulkins, Jr., Rosenberg Building, Santa Rosa. Messrs. Leland and Haley are the mechanical engineers.

COLUMBIA STEEL SCORES AGAIN

A record for the manufacture and delivery of galvanized steel sheets required for reconstruction of the Key Route Pier was made by the Columbia Steel Company. On account of continuous exposure to salt air and fogs, sheets containing copper content to provide maximum rust resistance and with an unusually heavy coating of zinc, were required.

Because of the large tonnage involved, approximately 150 tons in all, and the fact that special sizes not ordinarily carried in stock were required in order to avoid loss from cutting, several weeks time was saved through the ability of the Columbia Steel Company to manufacture these sheets at their Pittsburg, Calif., plant, the only mill for the manufacture of steel sheets located west of the Mississippi River, with the single exception of the Columbia's mill at Torrance, near Los Angeles.

The large amount of special forming made early delivery to the plant of the contractor important, and it was of equal importance that deliveries of corrugated sheets at the Pier site be made when wanted. The latter involved the use of special railroad equipment which could only be used for a short haul. All deliveries were accomplished without a single delay, thereby permitting the contractors, Guilfoy Cornice Works, to proceed without interruption.

It is worthy of note that the availibility of Columbia's mills permitted reopening of the Key Route Terminal at least thirty days sooner than would have been possible before steel manufacturing became one of the important industries in the West.

CONTRACTORS' ACT IS O.K.

Sweeping aside technicalities and claims of discriminatory legislation, the Los Angeles Court of Appeals has handed down a ruling upholding the constitutionality of the California State Contractors' Act.

Reversing a decision by Municipal Judge Joseph A. Call, Los Angeles, in the suit of J. E. Angers against Myer Cravens, the appeals court held that the act is not "unreasonable, arbitrary or discriminatory in any legal sense."

This is the second time in the past few months that attacks upon the constitutionality of the contractors' act, designed to protect the building public against crooked contractors, have been rejected by the courts.

Gratified by the court victory, Col. Carlos W. Huntington, state registrar of contractors, asserted that "the validity of the act has now been proven beyond all doubt," and pledged relentless enforcement of the regulatory act.

The test case was an outgrowth of a suit in-

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Plans by the Architect
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There will be many new school buildings
designed on the Pacific Coast
this year
which gives added interest to the
Vallejo School Plans
at this time.

stituted by Angers to collect $225 allegedly owing him by Craven for painting Craven's home. Craven refused to pay upon the ground that the work was unsatisfactory and that Angers was unlicensed. Judge Call ruled in favor of Angers and held the law unconstitutional. This decision, however, was reversed by the appeals division of the Los Angeles superior court.

Angers contended the law was invalid and discriminatory because contracts amounting to less than $200 were exempt, and did not apply to personal property contracts.

"This is the second time in the last few months that the law has been upheld, and we are now firmly convinced that the entire act is valid beyond all question of doubt," said Huntington. "The decision is sufficiently broad in scope to prevent future attacks upon the law.

"Consequently, we are going to carry on our policy of relentless enforcement of the act, which was enacted purely for the protection of the building public, and which has already met with considerable success in raising ethics and standards within the building and construction industry," he said.

The decision was written by Judge W. Turney Fox, and concurred in by Presiding Judge Edward T. Bishop and Judge Clement Shinn.

"It is our opinion that these provisions (the $200 exemption clause) do not render the act unreasonable, arbitrary or discriminatory," the court ruled. "It must be borne in mind that the legislature has considerable latitude in making classifications under the police power, and that the contractors' law was enacted pursuant to that power.

"It may well be that the legislature felt that the hazard or injury to the public from improper practices where contracts of large amounts were involved was more serious and far reaching than where the contracts were small in amount.

"Having come to such a conclusion it was necessary to draw the line somewhere. The principle is much the same as that involved in the distinction between petty and grand theft. As to the failure to include contracts involving personal property, all that need be said is that the inherent differences between real and personal property have long been considered sufficient justification for placing such property in different classifications."

ST. FRANCIS WOOD RESIDENCE

Henry H. Gutterson, 526 Powell Street, San Francisco, has completed plans for a two story and basement English dwelling to be built in St. Francis Wood, San Francisco, for Fred W. Cant at an estimated cost of $10,000.

FIRE PROTECTION AND THE NEW EARTHQUAKE LAW

In the opinion of Attorney General U. S. Webb the California State Architect is not required to recommend or compel the use of fire resistant materials in inforcing the new state lateral force law. Following is the text of Mr. Webb's opinion, addressed to George B. McDougall, State Architect, in response to a request for a specific ruling on the subject:

"Chapter 59, Statutes 1933, is an act relating to the safety of design and construction of public school buildings, providing for the regulation, inspection and supervision of the construction, reconstruction, or alteration of, or addition to, public school buildings, etc., etc.

"You ask whether your department is authorized by said Act, in approving plans for proposed construction or repair work on school buildings, to take into consideration not only safety as against vertical and lateral forces but also against fire hazard. You say that, while the language of the Act may not be specific as to fire hazard, it is the judgment of your Division of Architecture that public school buildings cannot be safe as required by the Act unless reasonable requirements as to fire resisting materials and construction, as determined by the Division of Architecture, are met. You call attention to the fact that in Section 2 of the Act it is provided that before letting any contract or contracts for school construction work the written approval of such plans 'as to safety of design and construction, by the Division of Architecture, must be first had and obtained.'

"You further call attention to the fact in Section 7 it is provided that the State Division of Architecture has full power and authority and it shall be its duty to make inspection of such school buildings and of such work of construction, etc., as in its judgment may be necessary or proper for the enforcement of the provisions of the Act 'and the protection of the safety of the pupils, the teachers and the public.'

"In Section 8 of the Act it is provided that upon the request of the board of trustees of any school district, or at least ten per cent of the parents having pupils enrolled in said school district, the Division of Architecture shall make an examination and report 'on the structural condition of any public school building,' etc., etc.

"I am of the opinion that the provisions of this Act do not authorize the Division of Architecture to make requirements as to fire-resisting materials and construction in the matter of school buildings. This is particularly made clear by the language of Section 9 declaring the Act to be an urgency measure necessary for the immediate perserva-

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tion of the public peace, health and safety, within the meaning of Section 1 of Article IV of the Constitution. This Section 9 reads as follows:

" 'This act is hereby declared to be an urgency measure necessary for the immediate preservation of the public peace, health and safety within the meaning of section 1 of Article IV of the Constitution and shall therefore go into immediate effect.

" 'The facts constituting the necessity are as follows: The series of earthquakes occurring in the southern portion of the State has caused great loss of life and damage to property. The public school buildings, constructed at public expense, were among the most seriously damaged buildings. Much of this loss and damage could have been avoided if the buildings and other structures had been properly constructed. The school buildings which will be erected, constructed and reconstructed to replace the buildings damaged or destroyed by the earthquakes should be so constructed as to resist, in so far as is possible, future earthquakes. These buildings will be erected, constructed and reconstructed at once and accordingly it is necessary that this act go into immediate effect in order that the lives and property of the people will be protected.'

"This language declares with no uncertainty that the purpose of the act is to prevent a recurrence of damage to school buildings from earthquakes. Particular reference is made to the necessity for proper construction "to resist, in so far as is possible, future earthquakes.' "

OAKLAND CWA PROJECTS

City Engineer Walter N. Frickstad of Oakland has completed an outline of ten projects to be carried out under the CWA and which will provide employment for 250 or more architects, engineers and draughtsmen.

The projects outlined are:

1—Further study of bridge approaches and arterials, the relocation of hill streets such as Mountain Boulevard, the location of the best route for the proposed East Shore highway to San Leandro Creek and a study of better communications between the residential district, the down town district and the Bay Bridge.

2—A municipal map of the underground structures of all public utilities in the streets of Oakland to fill a need which has been felt for years. Frickstad said the utility companies have their own maps, but that there is no general map for the information of fire, police and street departments.

3—A study of traffic hazards and traffic control in the city.

4—A study of the city to locate nonconformers and violators of the zoning laws.

5—A retracing and redrafting of worn-out or damaged city maps.

6—A general survey of all public buildings to learn their condition and to recommend changes, repairs and alterations.

7—A study of the city's recreational areas at present and an outlining of a future recreational program, with maps of existing and future playground facilities and betterments.

8—A study of the future uses of a civic site and the recommendation of the best and most available site for a civic center.

9—A general inspection of all the large buildings in the city with regard to fire and earthquake hazards especially and the number of entrances and exits.

10—General remodeling of the Museum Building and of other buildings of the library department, and a listing of all museum exhibits and general repairs to the museum.

DRAWS HIS OWN NUMBER

City Engineer Walter N. Frickstad of Oakland had a much needed Christmas gift in the form of a handsome drafting set, but he was rather embarrassed at receiving it.

Frickstad attended a meeting of the East Bay Engineers' Club, where the engineer with the lucky number was to receive the set as a Christmas gift. At the end of the meeting the engineers placed all their numbers in a bag, and after some discussion Frickstad was chosen to pick out the lucky number.

Closing his eyes, Frickstad plunged his hand into the bag and drew out his own number. Members insisted he keep the gift.

ACOUSTICAL BULLETIN

A bulletin containing accurate, impartial technical data on the principal acoustical materials for the benefit of architects, engineers and others interested in architectural acoustics, will shortly be issued by the Acoustical Materials Association, an organization formed last July by nine leading makers of these materials.

The purpose of the bulletin, and also one of the aims of the association, is to furnish standardized technical data on acoustical materials—particularly sound absorption coefficients—thus eliminating confusing variations in absorption data on different products. The establishment of such standards, members of the association believe, will prove beneficial to architects and others dealing with and using these materials.

To assure accurate, impartial data, the association appointed a technical advisory committee to regulate technical procedure and supervise all tests. This committee, the sole authority for material ratings, is composed of six leading consultants in the field of architectural acoustics: Paul E. Sabine, Riverbank Laboratory; V. L. Chrisler, U. S. Bureau of Standards; V. O. Knudsen, University of California at Los Angeles; F. R. Watson, University of Illinois; S. K. Wolf, Electrical Research Products, Inc., and R. F. Norris, Burgess Laboratories, Inc. The Riverbank Laboratory, Geneva, Ill., is the association's official laboratory.

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A GOOD SUGGESTION

Because we are in an age when government and business will be more closely identified, Henry H. Heimann, Executive Manager of the National Association of Credit Men, suggests the organization of a Civil Service University in Washington, D. C., under government auspices, similar in scope and purpose to the war and navy colleges, for the development of trained government personnel to integrate the business and governmental functions of the nation.

"If the depression years have revealed anything it is the penalty every one pays for lack of capacity in business," Mr. Heimann points out. "For example, would the banking collapse have been upon us had our bank personnel been trained from youth and had apprenticeship been exacted of them? If the official family of the banks had been composed of career men instead of 'social registerites,' as was frequently the case, would not the errors have been less frequent in banking?

"We are in an age when government and business will be more closely identified. The tendency, whether we like it or not, is in that direction. Let's not make the mistake that has been made in industry. Let us choose government officials, particularly the key men, who should not be partisan officeholders, with a care and discrimination that will insure good government. Let us give a primary education in government to all of our citizenry.

"Begin in the common schools and teach the fundamentals of government. Carry it through in your high schools and teach the theory and practice of government administration. For your text books in the high schools use the reports of the Departments of State, of Treasury, of Commerce, of Labor, of Interior, of Agriculture, and the Post Office. Too involved, perhaps, would be the War, Navy, and Justice Departments.

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"But war is not alone experienced on the fields of battle. The casualties of economic war are even more tragic. Why not have the government establish a Civil Service University in Washington for which young men, two from each State, will be drafted because of their high scholarship? Appointments could be made after competitive examinations. Training would include a major university course dealing solely with government and the broad economic needs of this nation, as well as international economics.

"The services of a trained, economic army of this kind might well answer some of your problems of government and would certainly eliminate partisan politics from key positions. The graduates would pledge service to the government for a definite number of years in return for their education by the government.

"Government, in the last analysis, is men. Let's begin building efficient, capable sergeants for our economic-government army!"

HEATING EXPOSITION

February 5th to 9th, at Grand Central Palace in New York, the Third International Heating and Ventilating Exposition will be held. Everyone who participates in the ownership of a building, factory, or home, may witness here the coordinated story of heating, ventilating, and air-conditioning, told by the specialists of the world.

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interest in engineering achievement, is only natural when the story is poorly told. Bereft of technical terms, but with no disregard of accuracy, a dramatic story will be found to underlie every engineering achievement. For instance, the automatic oil burner featured by one exhibitor at the Exposition, is as nearly human as a mechanical device can be. It is featured for its quietness and more-than-human reliability. According to an authority:

"It has a brain and a nervous system, with a temperature sense as highly developed as the most sensitive human being. We call this thermostatic control. It has a renal organ known as the filter, and this functions like the kidneys in that it purifies the fuel oil. It has arteries that carry the fuel oil from storage tank to boiler and it has a heart—the only heart of its kind in the world, a heart that will not wear out within the limits of a natural life. The oil pump is the heart of this oil burner. In over one billion revolutions it has shown no sign of wear—no pressure loss."

The reason back of this engineering achievement in heater construction and refined control, is that people do not wish to delegate supervision of the night and day fuel combustion in their homes unless the automatic mechanism is as reliable as two or three humans and more so.

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San Francisco Examiner

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When the amount of direct and indirect employment affected by building is fully realized, the importance of the building industry as an agency for providing jobs for workers is apparent.

Putting men to work is a national and fundamental problem. To quickly accomplish this desirable end it is essential that we concentrate on stimulating those industries which affect the greatest number of workers.

The textile industry excepted, building is responsible for the employment of more persons than any other single industry. Building construction consumes a greater variety of materials produced throughout the United States than any other single industry. Building construction has a greater influence on the trend of general business than any other single industry. The building industry is a barometer that shows the upward and downward movement of all business. Private building construction is the major product of the industry, and therefore is of vast importance in our national economic welfare.

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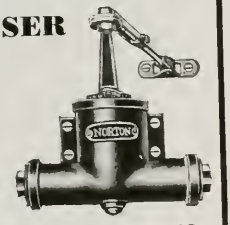

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San Francisco, Calif.

In addition to its public works program the Federal government should stimulate PRIVATE building construction. The government should take such steps as may be necessary to remove the obstacles to building, unite forces, and stimulate construction.

To do so will permit employers of labor throughout the United States to put millions of workers back to work.

INSTITUTE CONVENTION

The sixty-sixth convention of the American Institute of Architects, will be held in Washington, D. C., May 16, 17, and 18.

The general program will be arranged by the officers and the convention committee.

The gold medal awarded to Ragnar Ostberg will be presented and the customary dinner will conclude the convention.

Provision will be made for the sending of proxies by Chapters not in a position to send delegates. Full information on this will be transmitted direct to Chapter officers.

ARCHITECTS' EDUCATION

William A. Boring, Dean of the School of Architecture, Columbia University, in his report for the academic year ending June 30, 1933, states:

"The education of architects for their part in the world's work, changing so rapidly now in detail and point of view, is the task before the School of Architecture. . .

"Old principles require new and modern expression, now that efficiency and economy are ruling ideas in planning. The guidance of ideals in modern building must be in the hands of men of both wisdom and culture. The public taste will, in the end, find reasonableness satisfying. Greatness is not necessarily expressed in Gargantuan size, nor is huge tonnage of more import than good form and proportion. Good taste in building requires that moderation which makes it conform to the needs of human life—to an invitation to enter and enjoy. Techni-

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cal dexterity is a power in invention; it is a process, not an end; but it is highly developed, and more attractive to the junior architect than sound philosophy and excellence in form. The science of construction is now so developed that almost any size or height required in a structure may be realized. Dimensions are restricted only by function and economy, but to mold these forms into beauty requires the guiding hand of the architect."

AVOID OBSOLESCENCE

Beat the gun on building obsolescence and thereby protect capital investment, is the principal of the Tribune Tower Management. It is nothing new to repair where decay has set in or to replace worn-out equipment when forced to do so; but in this famous Chicago office building time is taken by the forelock and improvements are made before actual necessity arises.

The Tower was designed by one of the foremost architectural firms in the country and when completed so recently as 1925 it incorporated all the latest developments known to the best building arts of the times.

"It may seem strange," says Holmes Onderdonk of the Tribune Tower Management, "that this building should be undergoing modernization so soon. But no longer does the alert building owner wait for obsolescence to become acute before he modernizes. We had an outstanding building when it was erected, and we intend to keep it so. There is nothing extravagant about our attitude. On the contrary, we think it sound and conservative.. We know that before long tenants will demand air conditioning, so why wait until they start moving out before we give it to them? We also know that great changes have been made in elevator cars and equipment, and even though the average tenant could not point out the specific improvements he is definitely conscious of them."

Some of the elevator changes made in the Tribune Tower are as follows:

New cars of light colored wood combined with polished metal have replaced the more sombre cars of dark wood.

These new cars are larger, have higher ceilings, indirect lighting, and large ventilating fans which insure adequate ventilation.

In keeping with the modern design, the operating fixtures as well as the telephone cabinets are in one single panel of flush type.

Solid car doors take the place of collapsible gates. This does away with the unsightly machinery in the hoistway, and completely eliminates the sensation of speed, to which so many people object.

Sound-prevention, too, received attention. The new door hangers are mounted on rubber so as to give almost noiseless operation. All cars are carpeted to give a general feeling of dignity and comfort.

New hall signal lanterns equipped with gongs focus the waiting passenger's attention on approaching cars and help to speed up elevator traffic.

"We feel that our property is too valuable to allow it to become obsolete in any way," Mr. Onderdonk says. "It is true that our net income will be reduced because of these expenditures, but at the same time we know that our income will be maintained at a steady level. In other words, we are insuring against obsolescence; we are trying to make our tenants permanent."

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THE ARCHITECT AND ENGINEER

FEBRUARY 1934

...This Issue...

The New Junior High School Plant at Vallejo, California

Some Local Examples of Mayan Architecture

Northern California Architects Engaged in Historical Building Survey

Official Government Chart Showing Distribution of Funds Affecting the Professions

Winners of City of Paris House Competition

A. A. Brown, Consulting Engineer, writes about "Termites and Termite Control"

Engineers Modify Design of Golden Gate Bridge Fender

OTIS SYNCHRONOUS STAGE LIFTS
IN THE NEW HERSHEY COMMUNITY BUILDING
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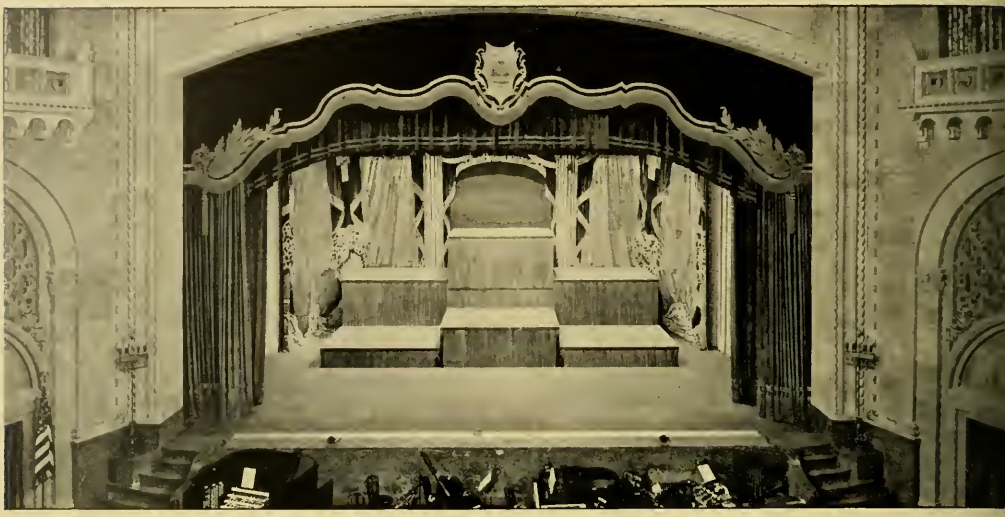

● THIS PHOTOGRAPH SHOWS THE HERSHEY STAGE LIFT AT DIFFERENT LEVEL

● VIEW OF THE SYNCHRONOUS STAGE-LIFT APPARATUS UNDER THE STAG

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Full details of this apparatus as well as the new Otis orchestra and console lift (as installed in this theater) are available on application to the genera office at 260 Eleventh Avenue, New York City.

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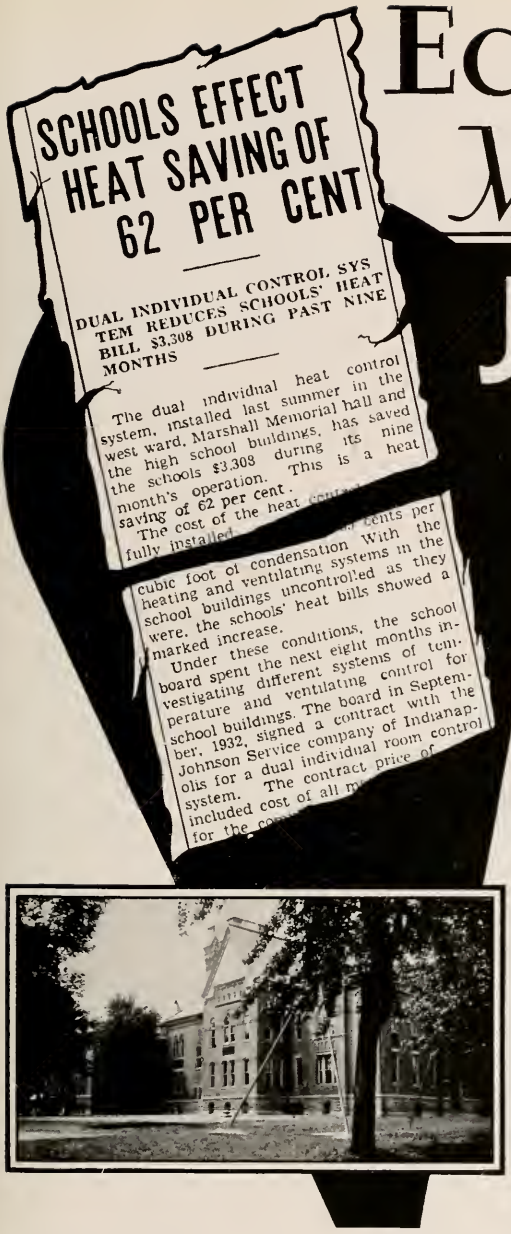
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cubic foot of condensation With the heating and ventilating systems in the school buildings uncontrolled as they were, the schools' heat bills showed a marked increase.
Under these conditions, the school board spent the next eight months investigating different systems of temperature and ventilating control for school buildings. The board in September, 1932, signed a contract with the Johnson Service company of Indianapolis for a dual individual room control system. The contract price of
included cost of all
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ECONOMY *through Modernization*

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DUAL SYSTEM of AUTOMATIC TEMPERATURE CONTROL

For the season of 1931-32, without automatic temperature control, the group of buildings at Columbia City, Indiana, required 8,070,000 pounds of steam condensate for heating. The Johnson Dual System was installed in the fall of 1932, and 3,152,000 pounds were used in the winter of 1932-33, a saving of 60.9%! The "money saving" referred to by the COMMERCIAL MAIL of Columbia City, Indiana, June 22, 1933, represents a slightly greater percentage, due to a change in the method of computing the charges made to the Board of School Trustees by the municipal heating plant.

This particular case is merely a striking example of the dividends paid by a Johnson System of Automatic Temperature Regulation. Often, the entire cost of the system is returned in a surprisingly short time. The Johnson Dual System insures a uniform temperature during periods of full building occupancy, and a reduced temperature in unoccupied rooms during the evening hours, without separate steam mains. Buildings equipped with single-temperature systems may be fitted with "Dual" thermostats to secure additional savings. Let our nearest branch office make a survey and quotation!

Pictured above: The West Ward, Marshall Memorial Hall and High School Buildings, Columbia City, Indiana.

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NEXT month THE ARCHITECT AND ENGINEER will present the eight winning designs in the City of Paris house competition. All of the drawings have been modeled and photographs of the models with a plan of each house will be shown. W. C. Hays is preparing a suitable article and the presentation should prove of considerable interest and value to members of the profession. Seventy-two architects participated in the competition. The prize winners:

Confer & Anderson, Berkeley.
Edward W. Kress, San Francisco.
Raymond W. Jeans, Berkeley.
Miller & Warnecke, Oakland.
James T. Narbett, Richmond.
Vladimir Ayvas Oglou, San Francisco.
Warren Perry, San Francisco.
Wastell & Evans, Oakland.

Mentions:—William J. Bartges, Michael Goodman, Benjamin G. McDougall, Morrow & Morrow, Newsom & Newsom, William A. Rich, Harry A. Schary, and William Schirmer.

The judges were William C. Hays of the Department of Architecture, University of California; Roland I. Stringham, and Paul Verdier, president of the City of Paris. Albert J. Evers, president of the San Francisco Chapter, served as an honorary member of the committee.

⁂ ⁂ ⁂

ELMER GREY of Los Angeles is one of a number of Pacific Coast architects who believes modern architecture is just another one of those periodical fads that will disappear in the course of a few years, giving way to the old schools that have lived for centuries. Referring to modern design, Mr. Grey airs his views to an Eastern correspondent thusly:

"In New York City, with Radio City under your eyes and the forceful personalities of some of its creators no doubt influencing your atmosphere, you may not be able to feel clearly the wants of the balance of the country. The success of the Chicago Fair is not to be taken as a fair index. Outside of New York, Radio City is looked upon by many as more of a "stunt" than anything else—and its theater, so far as its original purpose is concerned, as a joke. The Chicago Fair attracted as many visitors as it did, certainly not because its architecture was outstandingly beautiful, but rather because in the gloomy mood which the depression threw many people, they wanted to be amused. The general impression created by it was that brilliant coloring covered a multitude of architectural sins. It was not condemned because it was a transient place given over to entertainment and the style had been adopted, it was thought, because inexpensive. Those who saw it would never think of adopting its style for serious buildings of their own. I heard one Los Angeles man say that he would drive as far as Pomona (30 miles) to see it, but certainly not as far as Riverside (50 miles)! One never heard such remarks about the former Chicago fair.

"Hamilton Wright Mabie, many years ago, summed up the whole matter in the words: 'To reject that which his race bequeathed to a man, if such a thing were possible, would be to retur to rudimentary stage of growth and t attempt to compass in one short life th vast movement of history.' That is wha most of the modernists are trying to do. Throw overboard all the good that has been done in the past, a rich heritage, and naturally almost none of them succeed."

⁂ ⁂ ⁂

HARVEY WILEY CORBETT, architect and one of the designers of Rockefeller Center, in a forecast issued by the American Institute of Architects, predicted that 1934 will see a decided improvement in the building industry. Advanced methods of construction, Mr. Corbett said, and new ideas of comfort and convenience, demand that old buildings be replaced. Without a doubt, he said, "1934 will be the transition year from depression back to normalcy."

Mr. Corbett declares: "We overlook the fact that human nature in every walk of life and in every class of society, from the highest to the lowest, expands in space occupancy with a return of prosperity." A greater need for building space will be experienced, he said, than after the war, since during the last few years, and last year in particular, the industry has known "stagnation."

Work on small residential dwellings continued through the depression, although to a smaller degree, Mr. Corbett said, and now the government has entered the field of slum clearance as well as aiding in a partial decentralization of congested industrial areas in an effort to remove large groups of industrial workers to better living quarters. With a return of confidence in long-term credit and the stability and permanence of industrial and commercial fields, he added, the building of non-residential quarters undoubtedly will become more prevalent.

⁂ ⁂ ⁂

ENGLAND must look to America for improved factory construction. There has been a noticeable betterment in industrial architecture in this country for a number of years past. But not so in Europe, as indicated in a public lecture delivered recently by R. Goulburn Lovell, secretary of the South-Eastern Society of Architects, Hastings School of Art, London. Mr. Lovell said:

"The three principles of construction employed by man since he learned to build, are the lintel, the arch and the monolithic. The closer the separate character of these three principles is adhered to, the more truth there is in the construction of a building. This truth has existed and will exist, however much the question of style may be disputed. The new president of the Royal Institute has explained that in the time of his grandfather—Sir Gilbert Scott—the battle between the Gothic style and Classic style was as fierce as the battle today between the Traditional and the Modern schools.

"The Gothic revival of Pugin's days and his splendid advocacy of it, so influenced Sir Gilbert Scott some 60 years ago that he wrote 'I was from that moment a new man, old things had become new, or rather modernism had passed from me and every aspiration had become mediaeval.' His grandson, Sir Giles Scott, reviews today's battle between *extreme* Traditionalism and *extreme* Modernism and says he believes that the present battle of the styles will serve a useful purpose in cancelling out each of these extremes.

"During the last century, when industrialism sprang into vigor, 90 per cent of the factories in England were built by men who were not architects. Gaunt ugliness remains today and draws our attention to the slums which surround them. The tide has now turned. We have only to consider the factories built by competent architects and engineers to realize that there can be as much beauty in the construction in a factory, as in a temple.

"Design should grow out of the plan and the best planners are the best designers. We do not want revolution in architecture, but evolution, resulting from the new materials with which science has provided us."

VOLUME 116
NUMBER 2

THE ARCHITECT AND ENGINEER

FEBRUARY
1934

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Frederick H. Reimers, Architect

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Photo by Moulin

MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL, VALLEJO, CALIFORNIA

FREDERICK H. REIMERS, ARCHITECT

THE
ARCHITECT
AND ENGINEER

FEBRUARY 1934
VOLUME 116
NUMBER TWO

VALLEJO HAS OUTSTANDING JUNIOR HIGH SCHOOL BUILDING

by
ELMER L. CAVE

THE Mariano Guadalupe Vallejo Junior High School in many respects brings a new note of architectural interest into the educational system of California school buildings. Of this building it might be said that it goes to the opposite extreme in the theory of design of those who believe that our educational system is stereotyped and that as such it requires stereotyped architectural planning and designing.

The architect, the educator, the administrator, each has his problems. Their problems are not opposite nor do they lack a sympathetic relation to each other. The Board of Education of the City of Vallejo, composed of Russell F. O'Hara, President; Mrs. Elon A. Mitchell, S. J. McKnight, and the writer as secretary, recognized that the problem of the taxpayer is primarily one of economy in the construction and operation of such a plant. The board recognized that it also owed to its citizens the erection, consistent with economy, of an edifice sympathetic with the local environment and outstanding in beauty and utilitarian design.

The first problem of the Vallejo Junior High School was then its educational problem and to this end educational experts were employed to make a survey of the past, present and future educational needs of this district. Based on the number of pupils to be accommodated and taking into consideration the curriculum of subjects required by the State of California, a program of space requirements, including the size of each and every room in the building, was carefully determined. The number of pupils which should be provided for in the new building was fixed by taking into consideration the enrollment of 800 in the old Junior High School building and the increase of 102% in the Junior High School enrollment

Photo by Moulin

MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL, VALLEJO, CALIFORNIA

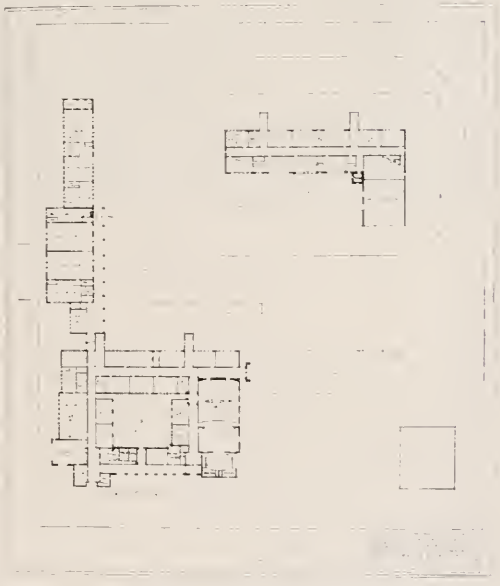
FREDERICK H. REIMERS, ARCHITECT

MODEL OF MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL GROUP, VALLEJO, CALIFORNIA
Frederick H. Reimers, Architect

from 1921 to 1932. This very substantial increase clearly indicated the necessity of erecting a building which would take care of the present enrollment, and provide for at least 200 more. Provision was therefor made to house at least 1000 pupils in the new plant.

The new building contains 30 class rooms, an auditorium which will seat at least 1200, library room, choral room, study hall, cafeteria, gymnasium, shops, laboratories, book room, and rooms for the administrative part of the school.

For administrative economy the program stipulated the relation or proximity of the various departments and in this connection there was the question of the distance of travel, the noise factor between classes or departments, the odor traveling between departments where cooking or chemicals are used. It was obvious that the band should



PLANS, VALLEJO JUNIOR HIGH SCHOOL
Frederick H. Reimers, Architect

not practice in the room adjacent to one where mathematics was to be taught and equally obvious that there would be little study in the English room if the pleasant odors of baking biscuits should come up from the lower floor just before the twelve rough usage are expected; all of these requirements were problems of the experts, as was the central operating room from whence the entire plant is administered.

Historic Background

With all of these needs to satisfy

Photo by Moulin

MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL, VALLEJO
Frederick H. Reimers, Architect

o'clock hour. The pupils training their voices must not at the same time entertain the entire school interested in other and more quiet studies. Four or five hundred pupils entering or departing from the auditorium must not disturb the entire building in their meanderings after leaving the exits. The library where quiet must prevail, the gymnasium where freedom for play must be unrestricted, the shops where noise and there was a desire to build into the Vallejo Junior High School an historic background that would recall the early California history of the city and its great founder, General Mariano Guadalupe Vallejo. It was in the early stages of planning that the board decided the building should be definitely a California design, with motifs of the Mission style bearing a relation to the

structures of the Padres. The Vallejo Junior High School may be described as California architecture. It is low and wide spread. Its plan is essentially a one story scheme tied together with corridors and patios in a form resembling somewhat the early missions of resemble to a degree the proportions of the adobe bricks used in the early California buildings.

An educational unit with its large window area class rooms is difficult to handle architecturally and such a building

Photo by Moulin

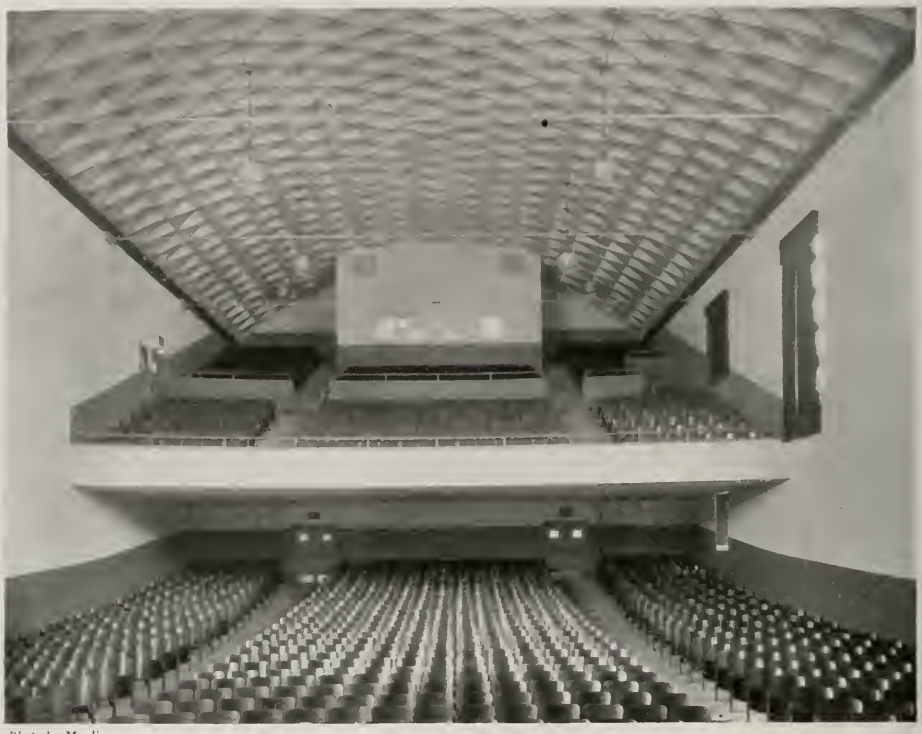
MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL, VALLEJO
Frederick H. Reimers, Architect

California. The architect studied carefully the proportions of the arcades of San Juan Baptista, the parapets of San Gabriel and the towers of Santa Barbara and the subtle inequalities and the details of their architecture have been worked into the design of this modern building. This California character is further accentuated by the use of a cast cement block construction for the walls, the proportions of which is usually uninteresting in spite of the skill of the architects. In the Vallejo school the foreground is laid out with low one-story wings and in this one story portion have been placed the rooms that permitted of an architectural handling not stilted by window requirements. Behind this arcaded one story portion is a spacious open patio where children and teachers may gather for open air classes, out-door plays and

student body meetings. Here we may see the children squatted on the tiled pavements listening to their teachers much as did the Indians of the Missions sit to hear the teachings of the Padres.

Behind this open patio is the main wing

tifully tiled patio with its fringe of shrubs. To the rear of the building and stretched out in a succession of elements are the gymnasium, the boys and girls locker rooms, the clinic and farthest removed are the shops and vocational departments.



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AUDITORIUM, MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL
Frederick H. Reimers, Architect

class room of the building, a two story structure which has been screened from the street by the one story part of the building and the distance across the patio. To one side of the patio is the auditorium and choral room, isolated in a semi-fireproof building completely enclosed in walls of masonry. To the opposite side of the patio faces the art department where the aesthetically minded may look out upon the beau-

Tower Ornate and Practical

In one corner of the patio is a graceful tower of open belvedere at the top and surmounted by a dome of gold. Perhaps here we see the transition from the early settling of the Spaniards and Padres to the gold discovery which marked the new California that we know today. The tower is practical and not an unnecessary expense for it houses the giant air condensing fan

equipment that supplies the auditorium with its air changes, and at the same time adds greatly to the architectural beauty of the building.

Of the construction it could be described as a Class C structure with outer walls of concrete tile. The visible parts of the roof are covered with handmade tiles similar to those used in the early Missions of California. A feature of the engineering design is the large trusless roofs of the auditorium and the gymnasium. The corridors of the two story class room building are of concrete for fire protection. All partitions are insulated with a fibre material over which the plastering is done, this material retarding the passage of sound between the rooms and the loss of heat from within and the entry of cold from without. The hardwood floors in the gymnasium are maple, while the class room floors are covered with linoleum. The finest black slate available has been used for the blackboards.

Fresco depicts early California days and personages

PROSCENIUM ARCH, MARIANO GUADALUPE VALLEJO JUNIOR HIGH SCHOOL
Frederick H. Reimers, Architect

The windows of all the class rooms are equipped with the latest hardware of the awning type, permitting each sash to be opened from a central control at the bot-

tom, and assuring uniform light and ventilation.

An interesting feature of the interior decorative treatment is the frescoing of all the plastered walls by a method similar to that used centuries ago by the great Roman architects and later used in our own state by the Franciscan builders. The coloring is applied to the plaster while the material is wet so that it becomes an integral part of the plaster. All the interior woodwork is antiqued as in our early Spanish buildings.

The administrative program for the building and the program for its parts is the work of Dr. F. W. Hart and Professor L. W. Petersen of the Educational Department of the University of California and Elmer L. Cave, Superintendent of Vallejo City Schools. Frederick H. Reimers, architect, was associated with Norman H. Green, structural engineer, and Robert L. St. John, consulting mechanical engineer.

RONDA, SPAIN
By A. C. Williams

ROME AND A TOWN IN SPAIN

by
A. C. WILLIAMS

YOU can be a millionaire in Rome for the taking. For the price of a good pension and a year's ticket to the galleries, the wealth of ages is yours for the looking. It is truly the Imperial City.

No city in the world perhaps accommodates itself so beautifully, so magnificently, so thoroughly to the kingly sport of whiling away the "weary" hours. Rome is indescribable in its variety of interests, in its aspect as a city, in its art treasures and the architecture that houses them, and in its parks and palaces and its surroundings.

The Campagna spreading out from Rome, to town of Tivoli and Frascati and Rocca di Papa, the Hills of Albana, the lakes—they all have a particular charm. Here it is the landscape. There it is some period of Italy's glorious past that smiles upon you—always beautiful.

Italy is dirty. It is hot in the summer.

REMAINS OF AN AQUEDUCT, ROME
By A. C. Williams

VILLA BORGHESE, ROME, ITALY
By A. C. Williams

Its houses are cold in the winter. Most Italians are children, and the water is bad. But Italy is beautiful! It is warm and colorful and happy and alive. Its people are poor, but they have good wine, and the wives can cook. They have blue skies and now, Mussolini.

Ronda, Spain, is so unlike Rome that it is delightful to compare them. Perhaps no town in a country so filled with romance and phantasy is as picturesque as Ronda in Southern Spain. Perched on the edge of a great height that drops dizzily off to the valley below, its cloven, carved cliffs holding up that wondrous wall that is the much - used, "much - sketched", "bridge at Ronda", this poor, white, clean little town with its cobbled streets and plastered house fronts, enchants the wanderer. Good living there two years ago cost seventy cents a day—wine extra.

PEN SKETCH ST. DOMINIC'S CHURCH, SAN FRANCISCO
ARNOLD CONSTABLE, ARCHITECT

SOME LOCAL EXAMPLES OF MAYAN ADAPTATIONS

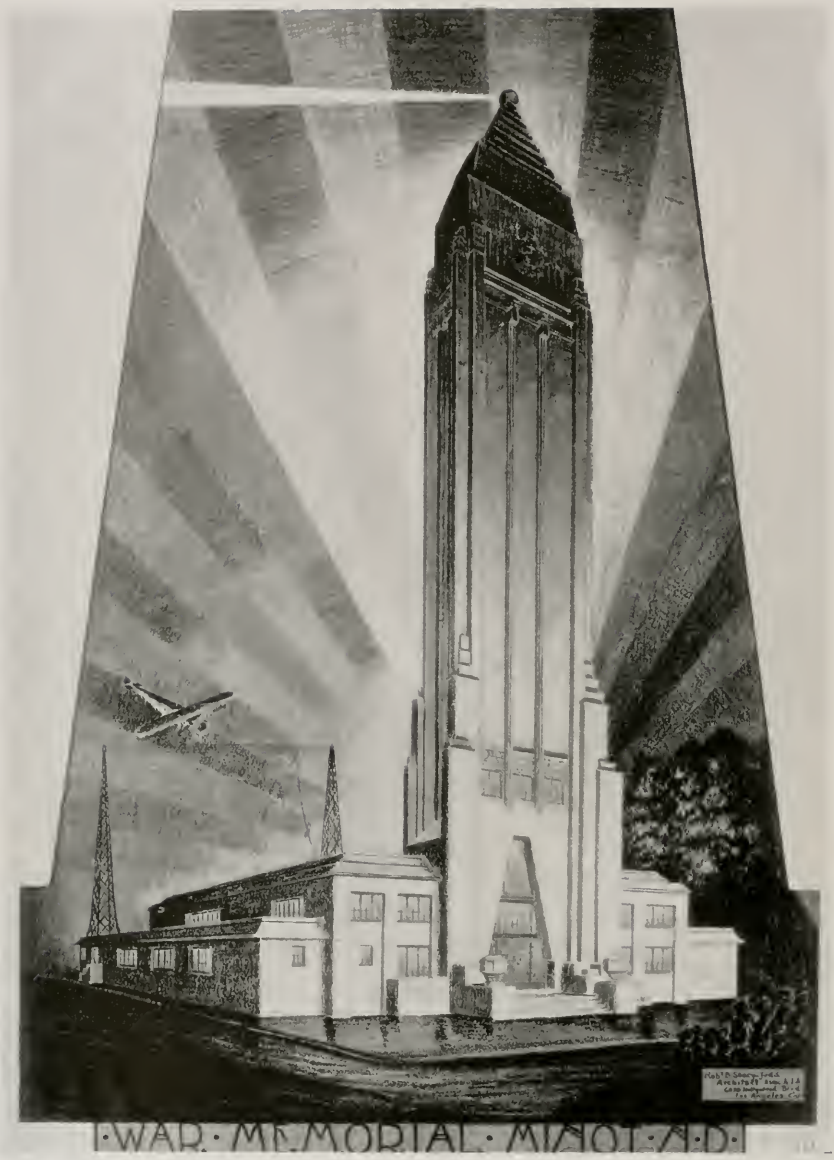
by
ROBERT B. STACY-JUDD, A. I. A.

BEFORE launching upon the self-imposed task of seeking new motifs for an All-American Architectural Style, two major problems had to be faced. One was to meet the heavy cost of gathering the necessary data and of a prolonged study of the Maya subject. The other was to meet the much greater cost of, at least, one expedition into Yucatan. The latter being entirely a matter of finance, presented a definite course. The path of the former was not so clear. Naturally, when considering the first problem, I realized that my architectural practice must suffer. To a great extent I would be forced to burn my bridges behind me. Later I learned the full price I had to pay.

It was not sufficient that I overcome such anticipated negatives as "It can't be done" or "America will not be interested, etc." A more serious problem was unsuspected. Reports reached my ears of stories being circulated to the effect that the "Maya style" in which I specialized was the limit of my architectural knowledge. In view of a background of many years of continuous extensive practice of my profession in three countries and on two continents, covering the gamut of recognized styles and types of buildings, the above mentioned reports were unjust, to say the least. One is not disturbed by constructive criticism. But these, together with other most unfair attacks, resulted in seriously delaying my plans. Further, reports reached me to the effect that I spent large sums of money on "publicity."

All Mayan Motifs

THE PATIO, PROPOSED T. A. WILLARD RESIDENCE
Robt. B. Stacy-Judd, Architect



All Mayan Motifs

PROPOSED WAR MEMORIAL, NORTH DAKOTA

ROBT. B. STACY-JUDD, ARCHITECT

It is true that over 200 leading national and international journals, covering the whole civilized world, have published lengthy illustrated articles concerning my interest in the Maya subject. In all cases the "publicity" was requested of me and not *by* me. Neither have I paid for one line of print. Nor must it be assumed that these criticisms affected my purpose. On the whole they tended to exhilarate me and acted as an additional incentive, if such were necessary.

Public Reception

In the beginning I believed that the demand for a National Art Style should and would come from the American public. If the theory was correct, then it was essential that the public be made acquainted with it To attempt this extensive undertaking meant dividing my activities into two parts. First, due to the absence of even a general outline of Mayan history, it was paramount that an attempt be made to correlate all available data toward that end. Second, if the attempt to create a new style showed reasonable possibilities of success, then, the result should likewise be submitted for public approval.

As events transpired, however, the order was reversed. The correlation of facts took almost eleven years to mature. In the meantime fate took charge, and through the medium of practical experiments the public learned of the subject.

As each successive example came before the American and foreign public, scores of letters were received endorsing the movement. Enthusiastic commendation poured in from all classes. These letters were followed by others, from manufacturers in widely scattered centres, who were interested in a variety of products. Spontaneous interest throughout America was aroused in the Maya subject, and a belief expressed as to the possibility of adapting its art motifs. Numerous editors of architectural and trade journals similarly expressed themselves. But the most encouraging aspect was the architect himself. Many architects have written me on the subject in terms of high approval. Others went further and actually experimented. Already numerous buildings, designed along lines of Mayan adaptation, are in evidence throughout the United States. The most noteworthy of these is the Medical Building, 450 Sutter St., San Francisco. The architects, Messrs. Miller and Pflueger, of that city, have given to this country one of its most beautiful and practical commercial structures. Its twenty-six stories of steel, aluminum, glass and terra-cotta stand as a splendid contribution toward my dream of an essentially Columbian style, based on Maya. In deep appreciation, I tender to the architects my sincere congratulations. In the decorative treatment of this structure they have expressed Mayan adaptations in a brilliant manner. If confirmation is necessary as to the possibility of adapting Mayan motifs to modern American demands, at least as applied to the commercial structure, this monumental effort more than supplies it.

The First Experiment

These Multum in parvo articles were prepared with the object of saving the interested reader time and effort. It is hoped that the reader can thus avoid the numerous disappointments and fruitless months of ceaseless toil which I experienced, due to early ignorance of the subject. As may be imagined, in such a pioneer task, progress was ponderously slow and awkward. Hundreds of detail studies, rough sketches and finished drawings were necessary. Many practical experiments had to be made.

The first example of Maya adaptation for an American style bears considerable importance in reference to public reception

and to the future of the movement. Therefore, a few comments on its appearance, culled from world opinions, are herewith submitted:

"It is the only existing structure that embodies exclusively the art, architecture and decorative designs of our prehistoric past; in other words the only building in the United States that is 100% American."

These are the exact words with which the magazine "Current History" in a lengthy, profusely illustrated premier article, hailed the advent of the Aztec Hotel, in Monrovia.

Wasmuths Monatshefte. Fur Bankunst, Germany, says of the same building; (translation):

"The architect of the Hotel in Monrovia, California, has cleverly translated into language of the Modern architect the deep suggestions which the dead Maya Culture *left to us survivors.*"

Dr. Kruger in "Architektur and Bautechnik," 1930, referring to America's great need for a national style (translation):

"From the center of American artists the call started, and the first to hear it was Robt. B. Stacy-Judd, an architect of Los Angeles, California, who had already made a name for himself through his unique buildings."

Another European journal says (translation):

"This interesting building has caused so much excitement, even in America, that the illustrated press

MAYAN STYLE COTTAGE, PISMO BEACH, CALIFORNIA
Robt. B. Stacy-Judd, Architect

gave whole pages to it."

Industrial Digest, New York, Sept., 1927, says:

"When a daring American architect, some five years ago, began to adapt the culture of the ancient Maya race to the needs of modern society, he inaugurated a movement which may revolutionize the art motifs of the Western hemisphere and result in the creation of a national architecture and series of decorative principles as distinctive and useful as any that the Egyptians, the Moors or the Greeks handed down to posterity from their ancestors in the Eastern hemisphere."

From all over the world have come well studied opinions decrying the erstwhile apathetic American attitude toward an essential American style, and highly commending the present proposal to found one based on the Mayan motifs.

The favorable receptions given my first attempt elated and encouraged me to continue. Not that I considered its design indicative of a new style. To me this structure when completed was unintelligible. As a creation it fascinated me. But it lacked reason. First it savored too much of Maya art to be original. It is one thing to copy, in toto, form and outline, or duplicate decorative ornament or a given style, but it is a vastly different undertaking to create an entirely new style, even when provided with workable fundamentals.

The value in this first attempt was the knowledge that a thorough scientific approach was the only course to follow. It

COTTAGE WITH MAYAN MOTIFS, PISMO BEACH, CALIFORNIA
Robt. B. Stacy-Judd, Architect

is essential that instead of being but a pleasing assemblage of form and color without meaning, a design must follow the universal laws of architecture. In other words, it must be "written" in definite language, recognizable as such. It must possess an alphabet and grammar. With this objective definitely established, the course to follow was clear.

The first step was to reduce the Mayan art composite whole to single units. This was accomplished as described under the subtitle "Attacking the Problem" in the second article of this series. The next step was to reconstruct the aforesaid segregated units into recognizable and intelligent form. Each unit comprising the new form should bear established relationship with its neighbor.

For example, the form of the structure, en masse, must designate its purpose, such as ecclesiastic, domestic, commercial, etc. The unit forms must be recognizable as applicable for bases, columns, capitals, cornices, friezes, openings, etc. These forms, in turn, must possess their recognizable and applicable decorative affinity, and so on.

The Domestic Type

The following will serve to illustrate the original method with which I approached a solution for the domestic type. First I took merely the plan of an actual, commissioned undertaking. (The structure had been erected intentionally in another, previously selected, style.)

By concentrating on each feature of the subject, such as windows, doorways, etc., without regard to the composite whole I prepared a series of studies which resulted in an incongruous array of odd designs, each feature deliberately carried to excess. These separate features I assembled as a concrete whole in the form of a water color perspective. The result was an amazing structure. It was not only unique but diametrically opposed to the Anglo - Saxon sense of beauty.

With this example before me I devoted over one year of strenuous effort to create what I term the first solution of the domestic type in the new style. By solution I mean that which is acceptable to modern American demands. Over three hundred studies were made in this attempt alone. The method of procedure was to take each feature of the first mentioned example, and modify it to modern needs and tastes. This process of rearrangement and elimination, directly applied to each feature, eventually produced an *entirely different form*. These new forms were gradually assembled into a harmonious whole. The result is the commissioned Willard project, a few reproductions of which accompany this article.

Although the effects attained in seeking a domestic solution are exceedingly encouraging, it must not be taken for granted that I am completely satisfied. Solutions must be made which are serviceable throughout the United States. Complete freedom of application of the new style will result in ultimate perfection.

Ecclesiastical Type

The next step for consideration was the ecclesiastical type. Opportunity came in the form of a commision for the First Baptist Church at Ventura, California. Endless difficulties arose. Again the tedious process of elimination and adaptation followed. In its favor I submit an excerpt from an unsolicited letter from the Church Board of Directors, which I received over one year after the structure was completed. It read as follows:

> "You have given us a building . . . . that is a monument to Mayan art, perfect in beauty and utility, one for which

we have been complimented by thousands of visitors from all parts of the country."

Again I warn the reader not to consider the personal element. This, or any other movement, if worthy of national importance, becomes greater than the individual.

CHAPEL AT IXTAPALAPI, MEXICO

Perhaps the critic will disagree with my method of approaching what I term "solutions". No doubt also, those far more qualified than I, will discover themes in the Maya art infinitely superior to those which appealed to me, themes leading into en-

All Mayan Motifs

LIVING ROOM, PROPOSED T. A. WILLARD RESIDENCE
Robt. B. Stacy-Judd, Architect

The object of quoting these outside comments is to assure the reader that he need not fear the element of mischance, which so often surrounds the untried. In this case the "untried" stage is past. Leading minds agree that the movement is a necessary one, and that the time is ripe for it. A necessary measure of public approval has already been voiced. The gate of a new field of art motifs is wide open. Ultimate success now lies wholly in the hands of American architects.

tirely new channels. As previously explained, the examples accompanying these articles are merely the product of but one individual. No matter who enters this new field of art, its vast store cannot fail to bewilder the student. There is so much to see, so much from which to choose. On condition however that the quest is sincere, it matters not what forms are chosen as motifs, or what ultimate form evolves. The use of the laws of the language of architecture applied to these new themes or

motifs will lead, ultimately, to a new "tongue", recognizable as such.

In submitting the design for the Chapel at Ixtapalapi in Mexico, it is well to bear in mind the above comments. Certain motifs which I discovered in Mayan art, appealed to my imagination as adaptable to the design in question. The motifs chosen, however, need not necessarily be accepted as the most suitable from the vast store of Maya art.

One encouraging feature in this design is worthy of note. That is the obviously marked improvement in comparison with the Ventura Church. Yet the motifs in both cases are similar.

Paramount Group

When designing the very large Paramount Group of buildings a host of entirely new complications arose. The general conditions to be considered were harmonious mass grouping, a necessity for definite character, a designation of the purpose of each building and a unity in general design.

The project includes an enormous auditorium capable of seating 23,000 people, a thirteen story department store; an office block; a hotel, in addition to a 2,500 seat theatre. The last is not seen in the perspective. The group covers two city blocks and the intervening street. Among the interesting features are the tower top of the office block, which shows the so-called Maya "arch" as the motif for the silhouette; the general facade of the office block and the entrances to the department store. The two exposed facades of the latter are comprised of V-shaped plate glass windows in continuous bays eleven stories high. As with all first completed studies, the water-color drawing of the group exposed numerous opportunities for improvement. Due to its large and complicated nature, perhaps the reader will realize the host of problems it presented.

Another interesting project, also intended to cover two city blocks, is the Fox Group. This aggregation of buildings consists of a theatre, shown on the nearest corner in the picture, an office block and a department store to the left of the theatre. Behind the theatre, to the right of the picture, is an exclusive apartment building. To the rear of this structure is a large recreation hall. The noteworthy features in the group are the theatre ensemble, and the upper part of the tower. The theatre entrance embodies an entirely new theme for openings.

The Wilshire Block

The third large project of the commercial type, is the Wilshire Building. This structure was designed to cover an entire city block. The project includes stores, offices, theatre, etc. An elevated sidewalk, twenty feet wide, serves an upper row of stores in the front facade. This elevated sidewalk extends over the two adjoining side streets. At one of the two main corners a subway is proposed to cross under the main boulevard. The Mayan motif employed for the general form is the stepped pyramid. It will be noted that the highest point of each of the four frontages is in the centre of each facade. These high points, however, are considerably less than the total height of the building, which attains its peak in the centre of the block. This system provides for a maximum amount of light and air at each of the four corners of the block. The stepped pyramid form, and the "cross potent" plan of the upper stories, make possible four large light-and-air courts and thirty-six roof gardens.

My principal effort in planning the preliminary stages of this project was primar-

ily to establish agreeable form and provide an abundance of light and air. Therefore the separate features show little decided development.

All three of the last mentioned projects were illustrated in previous issues, and constituted definite commissions. As it happened all three suffered total abandonment, or at least indefinite postponement, through the recent depression.

Next the question arose as to the practicability of applying Mayan motifs to the small house design. The opportunity came in the form of a commission for a group of small homes. One or two illustrations of this group accompany this article. All the ground plans are similar, but each elevation is a distinctive Mayan motif design.

Among the many experiments I have made was a cost comparison between the new style and a few prevailing styles. It was encouraging to learn that, what-ever the project, domestic, ecclesiastical or commercial, the Mayan type cost no more than the others, and sometimes less.

The Monroe Residence

Among a few other personal examples included in this series is the N.E. Monroe residence. This design experiment is a combination of Spanish and Mayan motifs and was the first structure erected in which the two styles were merged.

Originally the design was prepared on the Spanish theme. When the working drawings were almost completed the owners requested the design be changed to Mayan motifs. To make the complete change meant discarding practically all of the working drawings, thereby incurring considerable additional cost. We compromised. I endeavoured to blend motifs from the two styles. The result presented, at least, harmonious and intriguing possibilities. Due to the conditions mentioned above, the exterior exhibits a predominance of Spanish influence. The interior shows exclusively Mayan-motif in its detail. The windows in the living room presented particularly interesting departures in the method of handling drapes.

The Architect's Prerogative

If the reader has progressed through these articles to this point, he has, at least, found the subject of interest. If there is merit in this proposed American Style, based on Mayan motifs, then the subject is well worthy of further consideration. If America's design geniuses admit its possibilities, then let them test its practicability before condemnation. The result of combined effort will indubitably produce acceptable rhythm in line, form and color. The field open to experiment covers all architectural endeavor. Every branch of creative arts and crafts is an inviting opportunity. New forms, original creations (not reproductions, not even a variety of Rennaisance) are more in demand now than at any period of American history.

New motifs are eagerly sought for house, office and garden furniture; electric-light fixtures; interior decorations for ecclesiastic structures, public buildings and residences; general furnishings; fabrics; decorative tiles; stained glass work; ornamental iron; fireplaces; fountains; wall papers, etc.

The existing transitional period in the civilization of these United States presents an ideal condition for establishing a basic American art. Pioneering, in any line of endeavour, is infinitely more inspiring than routine. There is no doubt that abortive attempts in Mayan motif design have and will emanate from scores of mediocre craftsmen. A classic style, however, utilizing the suggested motifs, is possible

FIRST BAPTIST CHURCH, VENTURA, CALIFORNIA
First ecclesiastic structure embodying Mayan motifs. Completed in 1931.
Robt. B. Stacy-Judd, Architect

through the efforts of highly efficient minds, well versed in fundamental design principles. It is obvious therefore that considerable study is required to possess the necessary groundwork from which to create standards for the new style. Familiarity with the suggested fundamental motifs —continued practice in design—will assuredly produce an ultimate style which will prove acceptable.

A national art style is indicative of cultural eminence. A people so blessed are inspired with true patriotism and possess an added sense of pride in their nations welfare. It is the lack of altruism engendered by such art which leads to discord, cynicism and indifference to the public weal. America *must* possess her own art.

By virtue of his most ancient profession. the prerogative of the architect is leadership. Therefore it is to be hoped that in the Maya art he will visualise the opportunity to create and establish an ALL-AMERICAN ARCHITECTURAL STYLE.

THE END

BIBLIOGRAPHY

A few excellent books on the Maya subject are to be seen in all the principal libraries. Unfortunately, there is not yet a complete, corelated history of these people. Nevertheless, what books are available will prove of considerable value to the Maya student. The monumental works by Lord Kingsborough, and A. P. Maudslay, contain a host of valuable plates. Herbert J. Spinden, Sylvester Morley, and others have prepared volumes containing information all of which will prove helpful.

"Maya Architecture" published by Geo. Oakley Totten is a splendid contribution to the list and will prove invaluable to both architect and designer. Also one should not fail to read the two works "Central America, Chiapas and Yucatan", and "Incidents of Travel in Yucatan", written by John L. Stephens, the first man to record the existence of ruins in what we now know as the Maya area.

T. A. Willard has written many interesting stories and novels on the Maya subject. His information can be relied upon for accuracy. His books will help the student to gain a better understanding of the life and times of the lost civilization of the Mayas in Yucatan. The set of Maya books prepared by the Education Dept. of the Mexican Government are priceless. The measured drawings and carefully drafted details are works of art. Concerning the last mentioned volumes, application should be made through the offices of any Mexican Consulate.

ARCHITECTS PARTICIPATE IN HISTORICAL BUILDING SURVEY

SOME fifty architects and draughtsmen on the Pacific Coast have been given employment in the historical American buildings survey which is being conducted as a civil works project under supervision of the Office of National Parks, Buildings and Reservations, U. S. Department of the Interior. Upwards of 1000 members of the architectural profession have been employed in the survey which has been divided into 39 districts with an architectural technician in charge of each district. The three Coast districts are No. 37, comprising Arizona and Southern California, in charge of Henry F. Withey of Los Angeles; 38, Northern California, in charge of Irving F. Morrow of San Francisco; and 39, Oregon and Washington, in charge of Jamieson Parker of Portland.

In Northern California Mr. Morrow's staff has been working on such interesting projects as Mission San Miguel, Mission San Juan Batista, adobe houses and buildings in and around San Juan, Russian chapel at Fort Ross, Sonoma County land marks, Vallejo house near Petaluma, San Carlos Church, Monterey, old bridge and mill at Knights Ferry, houses in Sonora and St. Ann's Church, Columbia. Measured drawings have been made of all of these structures so that in case of their destruction it will be possible to replace them exactly as they were originally.

The District advisory committee in Northern California is composed of John Bakewell, Architect; Herbert E. Bolton, Professor of History, U. C., Director of the Bancroft Library; Lewis F. Byington, Attorney, long identified with study of California landmarks; Raymond W. Jeans, Architect; George Klinkhardt, Architect, Chairman Historic Monuments Commitmittee, Northern California Chapter, American Institute of Architects and Joseph R. Knowland, Publisher Oakland Tribune, and member of the California State Park Commission,

The following architects and draftsmen have been engaged in the survey in Northern California:

G. F. Ashley, Edw. O. Blodgett, Roger Blaine, Howard E. Burnett, Gustave Aaron, Wallace J. Alexander, Edwin L. Bauer, Wilfred Capell, Frederick Greisberg, Wm. H. Knowles, S. Arthur Myerson, Arthur L. Schmidt, Shephard Johnson, Theo. C. Bernardi, Ed. A. Russ, Clarence W. Dustin, Chas. G. Lundgren, Geo. R. Klinkhardt and Roger Sturtevant, the latter as official photographer.

Secretary Ickes speaking of the benefits of the survey, in addition to helping to solve the unemployment problem, said:

"The survey is an important step forward in conservation of our national historic resources. The type of shelter devised by mankind in every age and climate is an expression of the life of the people. In the United States, the adobe hut, the cliff dwelling of the agricultural Indian, the tepee of the nomad, the log cabin of the

pioneer, the cottage, the farmhouse in the country, the city dwelling, each expresses eloquently the culture and mode of life of the original tenant or owner.

"The churches and missions of the Franciscans and Jesuits of the South and West, the churches of the Russians in Alaska, the meeting houses of the Puritans in the East and middle West, the colleges, hospitals, mills, warehouses, shops, and other buildings of use in the community all belong to some chapter of the Nation's history. Unfortunately, a large part of our early American architecture has disappeared. It is inevitable that the majority of structures will at some time outlive their ultimate usefulness. And it admittedly is impractical to preserve all buildings or sites associated with events of incontestable historic importance.

"It is possible, however, to record in a graphic manner and by photography, before it is too late, the exact appearance of these buildings and their surroundings. This is the purpose of the Historic American Buildings Survey.

"The buildings listed for survey are not necessarily in imminent danger of destruction. They have been selected for measuring and photographing in the approximate order of their historic and architectural importance in their district. The record is made as a form of insurance against loss of data through future destruction, and also as a contribution to the study of historic architecture.

"The records collected in the course of the study will be deposited in a uniform file at the Library of Congress at Washington, D.C., and will be so prepared that reproductions of drawings and photographs may be available at slight cost."

FEDERAL ACTIVITIES RELATING TO THE PROFESSIONS OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

THROUGH the courtesy of the American Institute of Architects (the *Octagon*, official organ of the Institute) we are fortunate in being able to publish in this issue an interesting diagram or chart showing the origin of funds and distribution of same affecting the professions of architecture and landscape architecture.

Without such aid as this chart offers, few professional men, except those closely in touch with the rapidly moving Government activities, can visualize the organization of these agencies in their relation one to the other. The purpose of the chart is three-fold:

(a) to acquaint members of the professions of architecture and landscape architecture with the many public agencies through which Government monies are being expended, where these practitioners might be of service in professional consulting capacities;

(b) to encourage landscape architects located in sections of the country where these funds are being expended on projects involving problems of landscape architecture, to recommend the employment by Government agencies of competent professional supervision;

(c) to assist architects in discovering whether their services are needed in specific Government projects.

The funds provided through the sources indicated on the chart, and in connection with the regular Government agencies heretofore existing under normal Government procedure, are supplemented by the Public Works Administration fund for emergency work.

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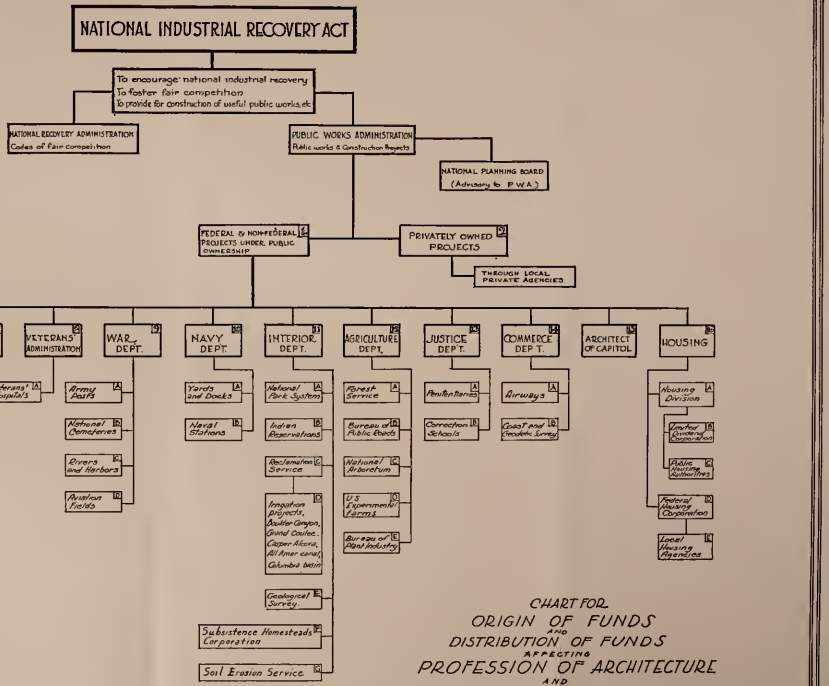


CHART FOR
ORIGIN OF FUNDS
AND
DISTRIBUTION OF FUNDS
AFFECTING
PROFESSION OF ARCHITECTURE
AND
PROFESSION OF LANDSCAPE ARCHITECTURE.

December, 1933

Compiled by A D Taylor, Landscape Architect

TERMITES AND TERMITE CONTROL

by
A. A. BROWN
Consulting Engineer

The serious consequences of the termite menace have been appreciated on the Pacific Coast for several years prior to the present nation-wide alarm over this insect pest. To study the problem, a co-operative enterprise, The Termite Investigations Committee, San Francisco, was financed by leading industrial corporations, railroads, public utilities, and lumber associations. The study has extended over a five-year period and has been national in its scope. The program has been directed by an advisory council from the faculty of the University of California, appointed by the president. About $60,000 has been expended in this work. The final report in book form, "Termites and Termite Control," of which Professor Charles A. Kofoid is editor-in-chief, is now available at the University of California Press. This article in the main is based upon Professor Kofoid's presentation of the biological background of the termite problem.—EDITOR.

THE sudden widespread interest in termites and their destructive activities is not caused by the introduction of hitherto unknown insects. When a man upon installing a new piano finds the supporting timbers collapse due to termite riddled floor and joists, he can be expected to inquire as to the cause of the difficulty. An analogous situation developed with marine structures in the San Francisco area in 1919. Green piling, driven in the early 1880's and during the intervening years, having remained unmolested by marine borers were suddenly found to be infested by these pests. Within the space of a few months many docks, wharfs, ferry slips, etc., collapsed. Investigation by the San Francisco Bay Marine Piling Committee* revealed the interesting fact that a newcomer to these waters was doing the damage, i.e., the Teredo navalis. This marine borer had been doing extensive damage to the dykes of Holland for centuries and probably was transplanted to these waters in the bottom of wooden vessels pressed into service during the World War. Its ability to live in brackish water greatly expanded the area subject to marine borer attack.

Unlike the invasion of the Teredo navalis, termites have been present for millions of years before man entered upon the scene. Professor S. F Light, of the University of California, says: "It cannot be too strongly emphasized that all of the termites doing extensive damage in the United States and, indeed, all except one, or possibly two, of the 54 species known to occur in the United States, are native species. We are not facing, therefore, any sudden invasion of new forms, as many have imagined, but simply an adjustment of species to new conditions."

The New York Times, May 18, 1933, says, in part, "The Entomology Department of the American Museum of Natural History received hundreds of telephone calls from early morning until closing time yesterday from worried home owners in New York City and vicinity asking for advice as to measures they should take to protect themselves against being literally 'eaten out of house and home' by the unexpected plague of the termites, or white ants, which recently have infested this city and vicinity for the first time in its history." Robert Reiss, writing in the Philadelphia Record, May 20, 1933, says: "Phila-

*Report of this committee "Marine Borers and Their Relation to Marine Construction on the Pacific Coast" available at the University of California Press.

delphia is besieged. Tiny demons of destructon with grayish-white, soft bodies, are burrowing underground and into houses. They are hollowing out cellar beams, eating into porches, cutting their almost irresistable way through floors into living rooms, where they are attacking furniture. They are termites, commonly but erroneously known as 'white ants,' and the Free Natural History Museum of the Academy of Natural Sciences would like the public to wake up to the fact that they are around. 'Because,' said the curator of the department of entomology of the museum, 'if people aren't made aware that the pest is here in increasing numbers, they may suddenly discover their floors caving in underneath them, and find staggering repair bills in their mailbox.' "

The Termite Investigations Committee is constantly receiving requests for information on "how to control this invasion of termites" from points well distributed throughout the United States. From these numerous requests the committee has gained the impression that the termite problem is not a local condition but that damage by termites is national in its distribution. (Fig. 1).

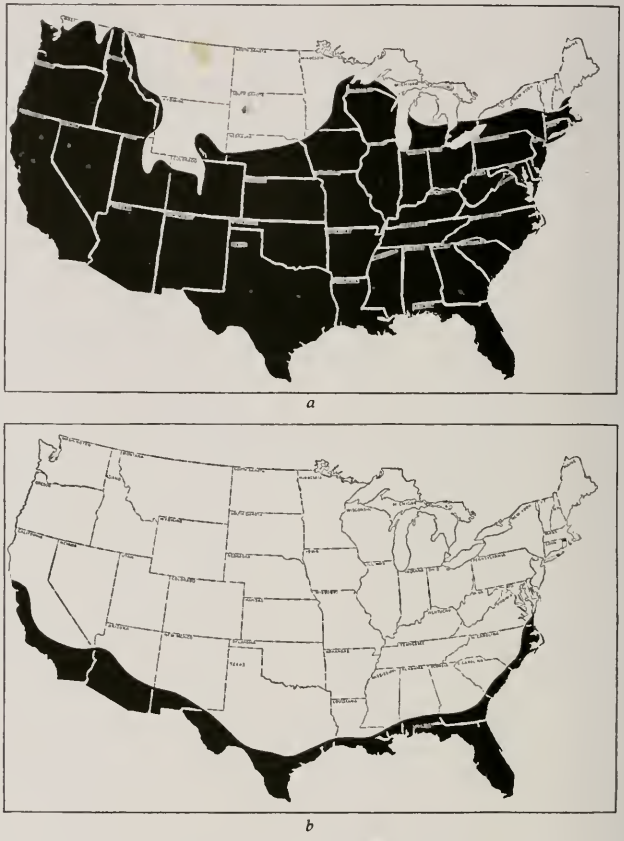


Fig. 1—a—Map showing in black the area of the United States subject to damage by subterranean termites.

b—Map showing in black the area of the United States subject to damage by dry-wood termites.

Termite a Primitive Insect

The termite problem arises because of man's interference with the fine balance in

nature. Termites are primitive insects related to cockroaches. In the normal scheme of nature they are the scavengers of the forest, feeding upon fallen timber, stumps, and other dead and decaying wood.

Early Americans made little or no effort to conserve large quantities of wood for any considerable period of time. In California our houses were made of adobe with comparatively small quantities of wood available to termites for food. As the land was subdivided boundaries were marked by fence lines. As our roads were built they were paralleled on either side by fences, and later these same avenues of communication became rights of way for telephone and power lines supported by wooden poles. In the early stages of the development of the community no attempt was made to preserve any of this wood buried in the ground from either fungi or termites. This marked the beginning of the present termite problem.

Termites and wood-boring beetles accomplish a unique function among insects in the scheme of nature by their assistance in returning wood to the air and soil, from whose chemical constituents it took its origin. They thus occupy a unique place in the natural cycle of water and carbon dioxide, playing a prominent part in the turnover of the more resistant product of photosynthesis, namely cellulose, especially in the tropics. The proteins, sugars, starches, and oils produced by plants are subject to ready disintegration, whereas cellulose, by reason of its physical and chemical powers of resistance, is less subject to bacterial action and to digestion. As a result, cellulose, which is so large an element of higher plant (or woody plant) growth, is the basis of the evolution of termites.

Termites are what they are today largely because they acquired at some period the ability to use wood-cellulose as food. Cellulose is a carbohydrate rich in energy. It is of a peculiarly resistant chemical nature and, with a few exceptions, animals are unable to digest it. Just how termites are enabled to do this remains as yet a partially unsolved problem. Their ability to do so has given them an abundant, continuous food supply.

Professor Charles A. Kofoid in his discussion of the biological backgrounds of termite problems says: "Man's relation to the termite's cellulose cycle is an important one in that he makes available to the termite large concentrated stores of cellulose. He groups wood in buildings in cities and villages, and spaces it conveniently along his lines of transportation in pole lines and fence posts, often with exposted sapwood. These foster the local concentrations of infestations, facilitate the spread of termites from one locality to another, and assist in the extension of infestations from the already existing natural reservoirs of the different species. Man buries timber in soil already inhabited by termites that have been accustomed to find their natural food supply in roots and stumps of forest and field. He places his houses, barns, and other structures in contact with the earth, thus favoring infestation by subterranean and damp-wood termites. He builds structures with convenient crevices in roofs and walls, into which dry-wood termites may find entrance and establish colonies. Man extensively provides conveniently grouped and comfortably heated homes for these wood-eating insects. The social organization of the human species thus supplements and favors the maintenance and spread of these social insects by providing alike food and shelter, grouped and distributed most

favorably for the organized life of the termite."

Building Industry Supplies Termite Food

In another particular man's activities favor the life of termites. The wood made

Fig. 2—Map showing distribution of dry-wood termites (Kalotermes minor) in California. Areas of abundance are shown in solid black. Areas of less abundance are cross-hatched. Heavy dots represent isolated occurrences.

other climatic factors, and are also differentially distributed in the several parts of the trunk. In general, sapwood contains a liberal proportion of these products, and for this reason, as well as because of the fact that it has a smaller amount of the available for termites through construction operations is not, as a rule, that dying on the stump and thus slowly brought to the verge of decay, but the tree felled in the full flush of its activity and rich in the stored products of photosynthesis, containing more proteins and other food elements desirable in the diet of termites. These food products are variously distributed in the trees according to season of year and more resistant lignin, it is more attractive to termites than the rest of the trunk.

The construction industry, therefore, has made available to these wood-eating insects an unlimited food supply under conditions favoring a rapid colonization. Little or no effort has thus far been made to prevent termites from inhabiting the wood thus made available. Termites multiply by geometric progression and in time

can be expected to move in and occupy the available food supply. Termites have been doing this very thing and have so extended their activities that their presence has finally been recognized, and each discovery is designated as an invasion. Economical and practical methods of preventing termite attack upon wood and its products must be based upon a knowledge of the habits and life histories of the particular types of termites causing the damage and, in some instances, even of the particular species.

Fig. 3—Map showing in black the distribution in California of the western subterranean (Reticulitermes hesperus).

Associated with the wood-eating habit of the termites is their cryptobiotic or hidden mode of life. They live shut off from the light in enclosed passageways, either entirely in the wood on which they feed or partly within the wood and partly within the earth. This mode of life, naturally arising from the borrowing habit, has had the extremely important effect of making them largely a group apart so far as enemies in the form of predators or parasites are concerned. They do not customarily encounter animals of other types or even the individuals of other colonies of the same species. Indeed they exhibit a highly developed antagonism to strangers from other colonies, and hence the possibility of spread of contagious diseases, so important in population control elsewhere in nature,

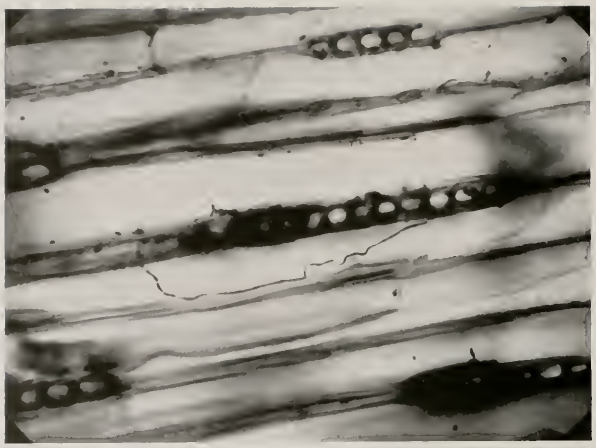


Fig. 4—Photomierograph showing minute fungous hyphae in the wood of the wall of a gallery of the dry-wood termite (Kalotermes minor). Section from the rough surface of gallery in the apparently sound, dry wood of a Port Orford cedar pole.

is reduced to a negligible minimum among termites. Their individual longevity, the potential morality of the colony, the existence of a continuously available supply of energy-yielding food, their co-operative activity, the protection from enemies and physical vicissitudes, such as extremes of heat and cold, storms, etc., afforded by their hidden mode of life, all these make for the piling up of population and a consequently augmenting rate of destruction of wood for the colony.

The termite problem arises because of man's attempts to change the ordinary processes of nature by preserving for his own use, over considerable periods of time, wood and its products, which it has been the immemorial function of the termites and associated organisms to break down and return to the soil and the atmosphere. The solution of the termite problem lies in man's interruption of the chain of events in the life cycle of the insect at some weak or accessible link, as by preventing or repelling the invasion of the primary pair of reproductives, or poisoning out the incipient colony.

Characteristic Types of Termites

Termites fall into two major habit types: wood-dwelling termites and earth-dwelling termites. Wood-dwelling termites confine themselves to wood, the whole colony being contained in the wood. Most wood-dwelling termites attack only dry, sound wood and are known as dry-wood termites. Earth-dwelling termites are of several different types. Of these the group which is by far the most important from the economic point of view is known as the subterranean termites. They live in the earth and in wood in contact with the earth, and feed upon wood placed in or on the ground and from such wood as a center extend their attacks to wood removed from ground contact. In some cases they build tubes or covered ways from their galleries in the

Fig. 5—Runways, tubes and towers made by subterranean termites under houses. Top—Branched tubes originating from a wood spreader embedded in concrete foundation. Wood forms had been left on the outside concrete wall of the building, which was only two and a half years old. Center—Towers of the western subterranean termite. Bottom—Towers and tubes of the western subterranean termite, from a stump left under a house.

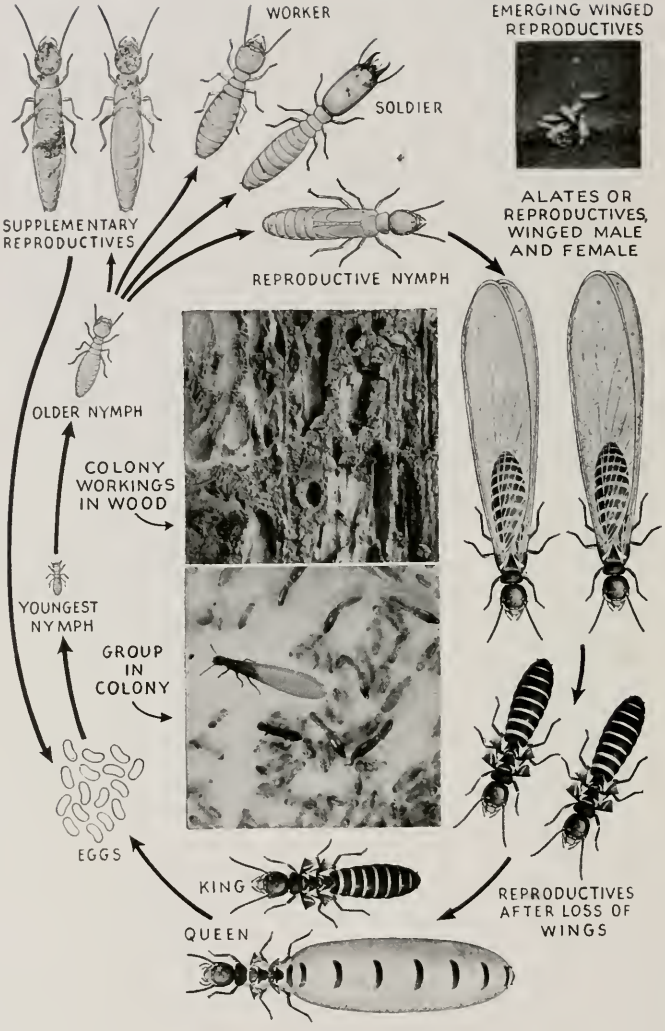


Fig. 6—The Life Cycle of the Termite

ground over wood, plaster, or cement to wood at higher levels, even to the second story of dwellings. They are widespread (Fig. 3) and are responsible for by far the greater part of the damage done by termites.

It will be seen that all types of termites live habitually in narrow galleries and passageways. These galleries may be entirely within the wood, as in the case of the wood-dwelling termites, or in burrows in the earth-dwelling galleries in the wood upon which they feed, as in the case of the earth-dwelling termites. These habits of life render impracticable the methods used for the control of other insects, such as biological control by the use of enemies, the use of poison bait as in the control of common house ants, the use of traps, or the widespread distribution of contact or food poisons as in the spraying of fruit trees for the codling moth, the poisoning of mosquito breeding grounds, or the dusting of cotton fields by airplanes for boll weevil, or the use of poison gas for grasshoppers. On the other hand, the concentration of the colony and the grooming habits of its constituent individuals facilitate the distribution and eating of poison dusts by its members.

Termite and Fungi Much in Common

Termites are thus not ordinarily visible to man except at the swarming period. Their secretive instinct limits their life at all other times to their burrows in the earth, or in natural vegetation, or in wood products. Their burrows in the earth are small, not easily disclosed, pass undetected and can only be found by diligent inspection and great care. Their burrows in wood come to notice only when the dead parts of trees, and the logs, poles, timbers, or houses in which they live are opened for inspection. Their devastations in the wood in which they are burrowing are often preceded by fungus attack and followed by the resulting dry rot and decay which obscure or wipe out the damage which the termites themselves had previously accomplished, though this is less evident in the case of the dry-wood termites. Termite damage, except in its final stages, may therefore escape detection, and after its completion be attributed to other causes to a misleading extent.

Associated with the termites in this biological scheme of returning to the air and soil the constituents of cellulose are the fungi which grow in wood, and some of which are responsible for its decay. The conditions favorable for termites are also favorable for fungi, and hence these two organisms are very commonly found in close and lasting association. The galleries of termites are kept closed so that the air contained therein is humid up to the point of saturation from the moisture of the respiration of the colony and from the wood itself. Certain tropical termites cultivate a fungus in their nests and feed their young upon it. The galleries of even dry-wood termites always contain an extensive flora of fungi, even immediately below the fresh surface of the new galleries (Fig. 4). Subterranean termites and dampwood termites of California are closely associated with fungi in soil and decaying wood. There is evidence that the film of wood which termites eat in the immediate surface of termite galleries contains the hyphae of molds and other fungi and that termites carry the spores with them as their burrows are enlarged and also when they emerge from colonies and seek new locations at swarming time. Fungi may be of value to termites in the preliminary softening of the wood, particularly during the incipient stages of development of the colony, but their most important function is probably the fulfillment of the protein and

vitamin requirements of the termites. Termites may thus be contributing agents in the maintenance and distribution of wood-destroying fungi though these fungi are not in any known respect dependent upon termites for their existence.

Termites, likes bees and ants, are social insects living in colonies. Like bees and ants they work together, performing special tasks for the good of the colony, but, unlike them, they live together continuously instead of interruptedly in the nests or burrows. This colonial habit has given rise to different kinds of individuals or castes fitted structurally to perform definite functions in the life of the colony: soldiers for defense, a king and queen for reproduction, often replaced or supplemented by the supplemental reproductives, and usually a special caste called workers for the collection of food, the care of the king, queen, soldiers, and young, and for the construc-

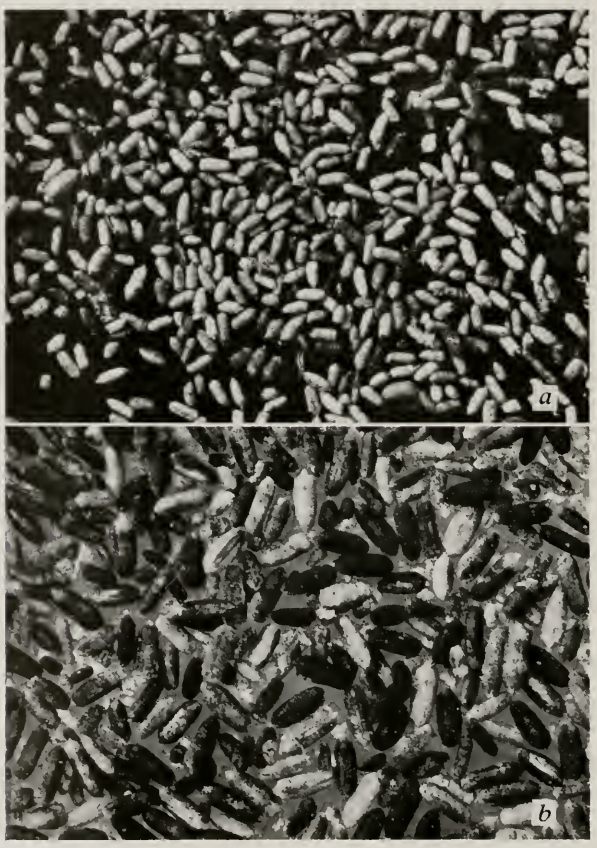


Fig. 7—Showing the pellets of two species of Anobird bettles enlarged. These may readily be distinguished from the pellets of any termite by their long, narrow shape and pointed ends.

tion of the nest, burrows, exits, tunnels, towers, and exploratory extensions of the burrows. The workers are aided in these labors by the immature stages of the other casts, known as nymphs. Indeed, in the simpler termite colonies, there is no specialized worker caste, and the work of the colony is accomplishd by the nymphs only. (Fig. 6.)

In the early stage in the development of a colony of termites a single primary king and queen remain as the reproductive pair throughout the life of the colony or for a prolonged period. The presence of this primary pair in the colony seems to inhibit the development of the reproductive function in all of the offspring, both male and female, while resident in the colony. The alates become functional reproductives only after they leave the parent colony and, in isolation, start a new one.

When the primary reproductives are re-

Fig. 8—At left, portion of a Douglas fir beam taken from a Berkeley home infested by beetles. The illustration at the right shows the result of their work in the branch of a tree.

moved from the colony by death, or when nymphs are detached from the colony without king and queen, supplementary reproductives develop. The supplementary pair take over the reproductive work of the colony. This adaptation to colonial life has the advantage of specialization of its members, and releases the maximum numbers of individuals for the utilization of the food supply and work of the colony. It also theoretically insures the potential immortality of the colony so long as any small fraction of it can find shelter and food for seven weeks, the time required in Reticuliterms hesperus for an egg-laying queen to develop.

Fig. 9—Work of a typical powder-post beetle, in oak flooring. Left, surface showing adult emergence holes. Right, work of larvae exposed by removing surface layer. When these typical "shot" holes appear on the surface of any article made of oak, ash, hickory, or mahogany it would be well to investigate.

Rapid Development of Colonies

The prevalent idea that a termite colony can be exterminated by finding the queen's cell and destroying her is true only in so far as it brings about a temporary cessation in the growth of the colony. In many species of termites the primary queen will in time be replaced by an equally fecund supplementary queen.

The termite colony develops slowly for the first year, but in many species the queen becomes gradually swollen, due to the enlargement of the ovaries, increases rapidly in egg-laying powers, and the colony soon increases in numbers, to millions in the case of some tropical species and many thousands in the case of our subterranean species.

A simple method of determining the presence of termites is to make observations during the fall swarming. On the Pacific Coast the alates appear in the colonies during the summer, and swarm after the first autumn rains. A less important swarming occurs in the spring. The western subterranean termites may confidently be expected to swarm in great numbers between 10 A. M. and 3 P. M. over wide areas on the first warm day after the first rain of the autumn. At the time of their swarming their bodies and wings are to be found on every hand in wayside puddles and along damp roadsides and sidewalks in all part of coastal California. A close inspection at such a time will usually disclose the presence of termites in buildings or structures nearby.

One chapter of the committee's final report is devoted to a discussion of other wood-boring insects whose appearance or workings resemble those of termites. Professor Edwin C. Van Dyke says: "The adult beetles, members of a group named 'The Death Watches,' bore into the rafters and other structures of old buildings, as well as into old furniture, and lay their eggs in well protected niches. The larvae soon hatch and commence to burrow, and in the course of a year reach maturity and transform into adult beetles. These beetles breed in the same structures generation after generation, sometimes for hundreds of years, with the result that the timbers ultimately become completely honeycombed and, of course, sooner or later give way. This is the cause of the collapse of many parts of old buildings. Westminster Abbey and several of the most famous of English cathedrals, as well as many on the continent of Europe, are now being overhauled as a result of damage caused by two species of this family. At the left of the picture (Fig. 8) will be seen an illustration of their work in a piece of Douglas fir taken from an infected timber in a Berkeley home. The illustration at the right is another example of their work.

"The common name of death watch was given to these insects years ago by the superstitious who, hearing their tappings in their burrows at the dead of night, interpreted it as a sign that some member of their household, perhaps the sick patient that they were attending, would soon die."

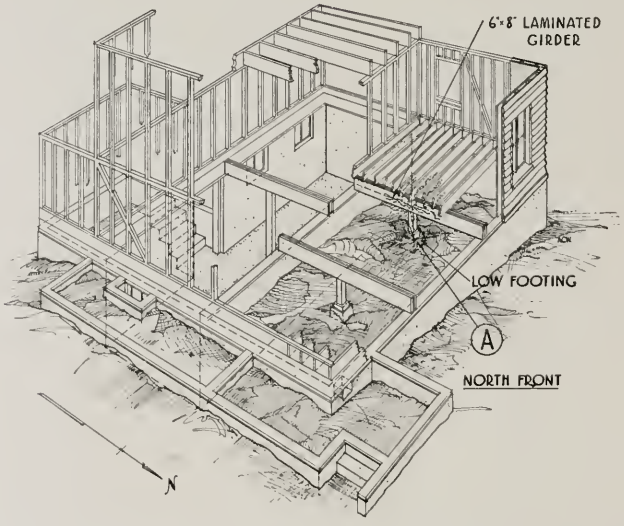
The powder post beetle is commonly found in California and are found breeding in hardwoods like ash, hickory, and oak. These beetles breed like the death watches, generation after generation in the same timber, finally reducing most of the interior to a pulverized condition (Fig. 9). The boring is done almost entirely by the larvae or grub. and in the interior of the lumber, the presence of these insects may not be made known until the wood work breaks down and exposes the interior. When shot holes are found on the surface of wood one should become suspicious of their presence. These beetles are very destructive, and after the termites themselves,

are the most injurious of all insects to seasoned wood products. The oak trim on the 14th floor of an office building in San Francisco was recently renewed due to damage by this insect. I have made many inspections of reputed termite damage to find that beetles were infesting the lumber.

The termite menace in the United States, until recently only vaguely appreciated except in some sections, is as serious and as widespread as it is inevitable. With 50 species of the insect native to the country, they are found in destructive and ever increasing numbers in practically every state. From their original useful function as forest scavengers, breaking down and restoring dead-wood tissue to the soil and air, termites have become a significant economic problem as a result of the artificial accumulation and wide-spread distribution of their natural food supply in the form of timber in man-made structures. The result has been to facilitate the spread and rapidly increase the number of these insects. To date, there have been on corresponding control measures because the habits and activities of termites have been so little understood by the construction industry and the general public.

The results of the study of the Termite Investigations Committee should be reassuring alike to the producer and consumer of wood. Structural methods are made available to the builder, architect, and engineer which if used will greatly reduce the loss due to termite attack. In addition, the maximum use-life of lumber and of wood products can be obtained and wood insured even in the tropics against termite attack by relatively inexpensive pressure treatment. The home owner can definitely rid his house of termite infestation by simple and effective methods. The conservation of our forest resources and the wider utilization of their products will both be enhanced by a policy of continuous warfare against termites.

Next month Mr. Brown will discuss the termite resistivity of wood and building materials.



SKETCH OF HOUSE SHOWING DAMAGE BY SUBTERRANEAN TERMITES

Engineering
and
Building Construction

CLOSE UP OF MARIN TOWER, GOLDEN GATE BRIDGE, SHOWING TRAVELING CRANE AT TOP

MARIN TOWER OF GOLDLEN GATE BRIDGE WILL HAVE 22,200 TONS OF STRUCTURAL STEEL

COMPOSITE PICTURE OF GOLDEN GATE BRIDGE by G. Moulin

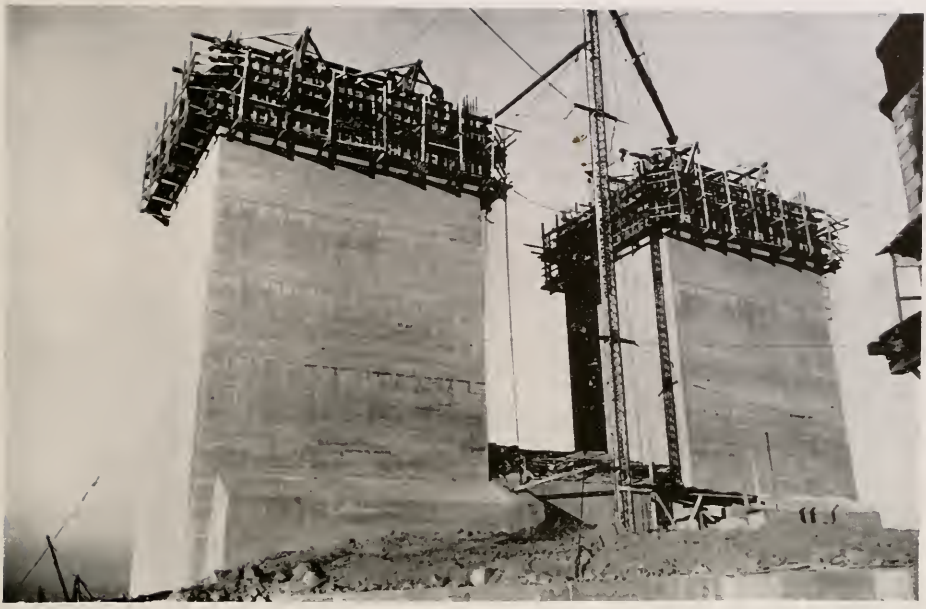
ENGINEERS MODIFY GOLDEN GATE BRIDGE FENDER DESIGN

OCCUPYING the spotlight as one of the centers of world interest among modern construction enterprises, the Golden Gate Bridge at San Francisco, in less than a year's time has progressed to a point where it stands approximately 28 per cent complete.

Joseph B. Strauss, chief engineer, and the consulting staff, consisting of O. H. Ammann, Leon S. Moisseiff and Charles Derleth, Jr., have expressed themselves as more than satisfied with the progress that has been made as the second year in the construction program commences.

Despite minor setbacks as the result of winter storms and such other minor obstacles as are invariably encountered in large projects, the four-year construction schedule set up by the engineers has been better than maintained to date.

It is anticipated, however, that, owing



GOLDEN GATE BRIDGE SHOWING PYLON S1, SAN FRANCISCO SIDE ELEVATION APPROXIMATELY 90 FEET; FINAL ELEVATION, 250 FEET

to a modification of the design of the protective fender for the south pier, decided upon by the engineers at a recent conference, the date of final completion may be delayed for a short period. Originally it was thought the bridge would be ready for traffic by November, 1936, but the possible delay, owing to the change in plans, may carry the opening date into the early part of 1937.

On every unit of the Golden Gate Bridge tremendous strides have been taken. Possibly the most spectacular part of the construction so far undertaken is that of the 750-foot Marin tower, which now stands as a majestic landmark on the north shore of San Francisco's harbor entrance.

As this is written the tower has reached an elevation of 404 feet above mean high water level and is within 44 feet of equaling in height the Pacific Telephone & Telegraph company skyscraper, declared to be the second tallest building in San Francisco.

The completed tower, including the bracing, will embody a total of 22,200 tons of steel, all of which has been completed and shipped from the eastern fabricating plants.

Already 10,475 tons of tower steel has been erected.

Steel for the San Francisco tower, erection of which, under the revised schedule occasioned by the fender plan changes, will not commence until the latter part of the current year, has been rolled and shipped to the fabricating plants in Pennsylvania in quantities sufficient to provide fabricated material representing a tower height of 480 feet when erected.

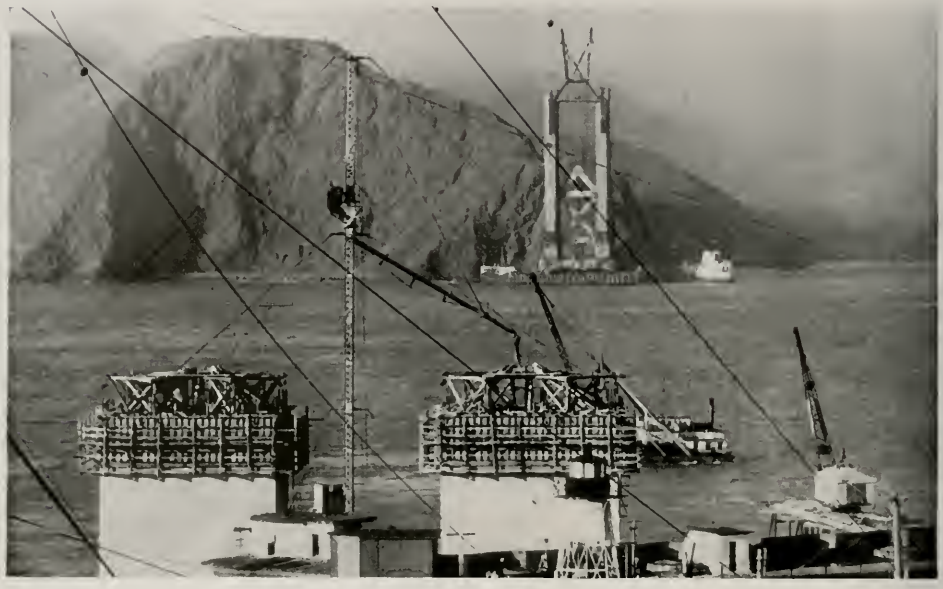
It is planned to slow up this portion of the work for the time being in order to obviate the necessity for payment of interest on material not actually needed for erection.

As the time approaches when the fabricated steel will again be needed it is planned to once more speed up the work in the eastern plants.

however, involves approximately better than 80 per cent of the entire anchorage job.

With the anchorages in place, work on pylons S1, fronting Fort Winfield Scott on the San Francisco side, and pylon N1, on the north side of the Golden Gate, is progressing rapidly.

Pylon S1, which will support the seaward side of the arch over Fort Scott, has been completed to a height of 113 feet above high water level and now towers above the fort itself. This pylon will be carried to a point 181.5 feet above high water level before it is temporarily discontinued for cable spinning.



GOLDEN GATE BRIDGE, SHOWING LOCATION OF PYLON G1 WITH MARIN TOWER ERECTION IN THE BACKGROUND

Suspension Cable Anchorages

The gigantic anchorages on the Marin and San Francisco sides of the Golden Gate, which will support the two suspension cables, already have been completed up to the first stage. The second stage of anchorage construction consisting of the pouring of the weight blocks and the concreting of the face of the anchor block cannot be undertaken until the cables have been spun. This first stage of the work,

After the cables have been spun the pylon will be completed to its total height of 250 feet.

In the construction of pylon N1 the an-

chorage steel has been erected in it and is now in process of being riveted prior to the pouring of further concrete in the pylon forms.

According to estimates of the cost and progress department of the Golden Gate Bridge and Highway District approximately 185,000 barrels of cement produced in the Redwood City plant of the Pacific Portland Cement Company have been used in the construction of the north pier, north and south anchorages and the pylons.

With all this work completed and under way construction efforts from now on will be centered at the south pier, 1125 feet off Fort Point.

EXCAVATING FOR PROTECTIVE FENDER

Additional excavations in preparation for erection of the protective fender under the revised plan are now under way and are to be completed within the shortest possible space of time so that actual work upon the fender may be commenced.

This fender ultimately will act as a cofferdam to provide an area of still water for caisson operations at the pier site. The steel caisson already has been launched at the Moore Drydock company's plant in Oakland estuary and a wooden cofferdam is being built on top of it.

In the meanwhile preliminary work is being carried on in preparation for the construction of the high and low viaducts of the Presidio approach road.

This work to date has consisted of clearing the right of way for the high viaduct.

Recently, under the direct supervision of General Manager James Reed and

[Turn to Column 2, Page 52]

GOLDEN GATE BRIDGE SHOWING MARIN TOWER UNDER CONSTRUCTION
Photo taken at a distance of one mile

NEW SYSTEM OF CONTROL FOR GAS FIRED BOILERS

by
JAMES R. FERGUSON

THE largest public institution of its kind in the world, the new Los Angeles County General Hospital, recently opened, has been provided with operating equipment made to conform with the most rigid specifications. The hospital contains approximately 31 acres of floor space and normally 2,500 beds, with emergency accommodations for 900 extra beds. Equipment and service is of an unprecedented standard.

Steam heat is supplied to the building from a completely modern and efficient natural gas-fired boiler plant. The original boiler plant installed several years ago at the old hospital and changed over in 1927 to natural gas service, has been enlarged to take care of the added load. The two 250 h.p. Stirling and two 250 h.p. water tube Llewellyn gas-fired boilers have been augmented by two 500 h.p. induced draft Badenhausen and two 500 h.p. four-drum Foster-Wheeler boilers, each of the Badenhausens having four Mettler burners and a boiler heating surface of 500 sq. ft. with a furnace volume of 1250 cu. ft. each. The area of each furnace floor is 120 sq. ft.

The total boiler installation, serving both the old and new units of the hospital, is now 3,000 h.p., of which 2,000 h.p. has been added for the new Acute Unit. From this boiler plant, 250 miles of pipe have been laid, taking gas-generated steam to every part of the hospital for generation of electricity in the laundries, for sterilizers, water heaters, kitchen equipment, drying rooms, and radiators.

The main kitchen of the hospital, 120 ft. wide by 260 ft. long, is said to be the largest and best equipped kitchen in the world, a sum of a half million dollars having been expended upon it. An extraordinary operating plan for the movement of food has been devised. In the main kitchen, as well as in the 84 auxiliary and diet kitchens throughout the building, all cooking equipment, including ranges, bake ovens, roasting ovens, deep fat fryers and toasters, are fired with natural gas fuel, insuring the greatest possible cleanliness, efficiency and fuel economy.

ENGINEERS MODIFY GOLDEN GATE BRIDGE FENDER DESIGN

[Continued from Page 51]

Chief Engineer Joseph B. Strauss, detailed explorations of the entire area at the bottom of the Golden Gate outside the location of the fender of the south pier has been carried out.

The soundings have extended to a radius of over 400 feet from the outer rim of the fender, a sounding being taken every 20 feet in both directions. In all more than 600 soundings have been taken and these have furnished a complete verification of previous data compiled by the engineering board.

These soundings are being ploted by the engineers and a relief map, showing the entire bottom of the Golden Gate in the vicinity of the pier and fender, will be prepared shortly.

« « « « With the Architects » » » »

HILLSBOROUGH RESIDENCE

Plans have been completed by Noble and Archie T. Newsome, Russ Building, San Francisco, for a $12,000 residence in Hillsborough for Mr. and Mrs. John Middleton Holmes. The same architects are preparing preliminary plans for a large country place in San Mateo County, the estimated cost of which is $20,000. Friends of Noble Newsome are pleased to see him back in the office, he having fully recovered from an illness due to injuries received in an automobile accident.

APARTMENT HOUSE

R. R. Irvine, 2048 Market Street, San Francisco, has completed plans for a three story and basement frame and stucco apartment building to be erected on the southwest corner of Jefferson and Webster Streets, San Francisco, at a cost of $30,000. Benjamin Liebman is the owner and builder. There will be eighteen two, three and four room apartments.

MENDOCINO COUNTY SCHOOL

A reinforced concrete gymnasium, a frame classroom building and shops will be built at Covelo, Mendocino County, for the Round Valley High School District. Plans are being prepared by William Herbert and C. A. Caulkins, Jr. of Santa Rosa. The Federal government has made a loan of $32,000 and the district has voted an additional $28,000.

EUREKA STORE BUILDING

The K. E. Parker Company has been awarded a contract to build a one story, basement and mezzanine store building at 4th and F Streets, Eureka, for Montgomery Ward & Company. The plans were prepared by the company's own architect in Chicago.

SEACLIFF RESIDENCE

A $15,000 residence will be built in Seacliff, San Francisco, from plans by Farr and Ward, 68 Post Street, San Francisco. The owner is Fred B. Moss. The style of the house is Italian.

LOFT BUILDING ALTERATION

Jesse Rosenwald, consulting engineer, 525 Market Street, San Francisco, has completed plans for extensive remodeling of a five story and basement and mezzanine loft building at 650 Second Street, San Francisco, which has been leased to Hiram Walker, Incorporated, liquor dealers. The building is owned by the Brandenstein Estate.

SCHOOL PLANS COMPLETED

H. A. Minton, architect, 525 Market Street, San Francisco, has completed plans for extensive remodeling of the Girls High School at Geary and Scott Streets, San Francisco. The front of the building will be of brick or similar to the old structure, while the rear portions will be Gunite cement. L. H. Nishkian is the engineer.

HORSE RACING PLANT

Gordon B. Kaufmann, Union Bank Building, Los Angeles, is preparing working drawings for a $500,000 horse racing plant at Huntington Drive, Arcadia, for the Los Angeles Turf Club. Construction will be handled by Lindgren & Swinerton, Inc., San Francisco and Los Angeles.

NEW HOSPITAL UNIT

Charles F. Dean, California State Life Building, Sacramento, has practically completed drawings for an additional unit to the County Hospital, Marysville, Yuba County. A Federal allotment of $67,000 has been granted.

MISSION RESTORATION

Carmel Mission is to undergo extensive remodeling under the superintendence of Henry Downie, restoration engineer. About $50,000 will be expended by the Bishop of Monterey-Fresno Diocese. Some of the crumbled adobe walls will be replaced as well as the tile roof.

GARBERVILLE SCHOOL

Plans have been prepared for a one story frame school building at Garberville, Humboldt County, by Franklyn T. Georgeson of Eureka. The improvements will cost $12,000.

GRANTED CERTIFICATES

At a recent meeting of the California State Board of Architectural Examiners, Southern District, provisional certificates were granted to the following: Alfred T. Gilman, 11110 Cashmere Street, Los Angeles; Edward John Mussa, 262 Thorne Street, Los Angeles; Ben Hilliard O'Connor, 123 South Camden Drive, Beverly Hills.

HUNTINGTON BEACH SCHOOL

Allison & Allison, Edison Building, Los Angeles, have completed working drawings for a two story Class A school building at Huntington Beach to cost $200,000. There will be an auditorium and 31 classrooms.

HOTEL ADDITION

W. E. Schirmer of Oakland has completed plans and is taking bids for a two story steel frame and reinforced concrete addition to the Lake Merritt Hotel, Oakland. Improvements will provide more dining room space.

MARIN COUNTY RESIDENCE

Harvey P. Clark, Shreve Building, San Francisco, has recently completed plans for a stucco residence to be built in San Anselmo, Marin County, for Dr. Mary H. Layman, Stanford Hospital, San Francisco. Estimated cost of the house is $15,000.

RUSTIC CHAPEL

W. C. Ambrose, 244 Kearny Street, San Francisco, has prepared plans for a one story rustic chapel for St. Marks Episcopal Parish, Crockett. The exterior will be of redwood shakes and the interior of exposed timber.

FARM HOUSE TYPE RESIDENCE

Myron Selznick of Los Angeles is having plans prepared by J. E. Dolena, 9397 Wilshire Boulevard, Beverly Hills, for a $100,000 residence which is being designed in the Pennsylvania farm house type.

SACRAMENTO SCHOOL

Plans have been completed and bids will be received March 3rd for a reinforced concrete high school building in Sacramento. The architect is Harry J. Devine, California State Life Building, Sacramento.

ADDITION TO CLUB BUILDING

George W. Kelham, architect of San Francisco, is completing plans for an addition to the Pacific Union Club building, Mason and California Streets, San Francisco. Construction will be of steel and stone. The addition will be used as a card room. H. J. Brunnier is the engineer.

CHAIRMAN OF NEW COMMISSION

John C. Austin, architect of Los Angeles, has been named chairman of the new California State Planning Commission, the other members of which are Archbishop Edward J. Hanna of San Francisco, and Vincent S. Brown.

SAN JOSE AUDITORIUM

Binder & Curtiss, 35 W. San Carlos, San Jose, have working drawings 50 per cent complete for the new civic auditorium to be erected in San Jose. It will be a reinforced concrete and steel structure with seating capacity of 3,800. Plans will be ready for bids about April 1.

MODESTO COURT HOUSE

The supervisors of Stanislaus County will advertise for bids shortly for the construction of an addition to the county court house in Modesto. The government recently allotted $225,000 for the project. E. G. Ernst, 9 W. Cleveland Street, Stockton, and G. N. Hilburn, 1312 Eye Street, Modesto, are the architects.

SEBASTOPOL SCHOOL SURVEY

State inspection of the high school buildings in Sebastopol, erected more than 30 years ago, has been asked by the trustees of Analy High School District. If the building is condemned immediate steps will be taken for the erection of new buildings.

HIGH SCHOOL BUILDINGS

A bond election will be held March 13th to vote $75,000 for the construction of a group of shop buildings at the Turlock Union High School, Turlock, Stanislaus County. Preliminary drawings for the buildings have been prepared by G. N. Hilburn of Modesto.

STOCKTON WAREHOUSE

B. C. Allen, engineer for the Stockton Port District, Stockton, is preparing working drawings for a cotton compress and warehouse to be erected by the district. Plans will go out for bids about March 1. The government has allotted $216,999 for the project.

CAR FARE FOR MY LADY

Recently several architects have received a call from a prospective client—a woman seemingly well educated and refined who talks quite deliberately and at considerable length about a residence she proposed to build upon a large lot, a hillside site, in Hollywood. She is much interested in music for which provisions must be made. She discusses the style of architecture, the cost, her finances, the family relations and draws a floor plan. She then suggests an appointment, will leave her card, but upon opening her hand bag suddenly discovers she has lost or misplaced her purse. Then follows a pantomime of distress, a story of a trip with a friend who has gone on to a beach town and she has no way of reaching her destination. It concludes in the architect advancing just a car fare to reach a suburban town.

—*Southwest Builder and Contractor*

HOSPITAL BUILDINGS

Charles F. Dean, California State Life Building, Sacramento, has working drawings about complete for remodeling existing buildings and four new buildings to be constructed at the Yuba County Hospital, Marysville. Plans will go out for bids about March 1.

HOSPITAL SERVICE BUILDING

Charles McKenzie, 415 Twohy Building, San Jose, is completing working drawings for a service building at the Santa Clara County almshouse. Plans will go out for bids about March 15. The government has allotted $51,700 for the building.

OREGON REGISTERED ARCHITECTS

The annual meeting of the Registered Architects of Oregon has been postponed until early in March, as have the State Board examinations. Those wishing to take the examination should get in touch with Margaret Fritch, secretary, 907 Spalding Building, Portland, Ore.

ARCHITECTS OF STOCKTON POSTOFFICE

Through an oversight the name of Howard G. Bissell was omitted as architect associated with Messrs. Bliss & Fairweather in the design of the Stockton postoffice building, pictures of which appeared in the December issue of THE ARCHITECT AND ENGINEER.

STATE EXAMINING BOARD MEETS

Three candidates out of six passed the Washington State examination for architects' licenses held December 18 to 20 at the University of Washington, Seattle. The new members of the profession are: George Harold Davis, Jr., 4134 Brooklyn Avenue, Seattle; Harry Lockland, 1014 South Lake Street, Colfax; and Anders Oien, 4705 Brooklyn Avenue, Seattle.

The new architects' examining board, appointed recently by Gov. Clarence D. Martin, functioned for the first time. The personnel is: Harry Huse, state director of licenses, Olympia, ex-officio chairman; George Rasque, Spokane Savings and Trust Company Building, Spokane; Robert F. McClelland, Republic Building, Seattle; and Nelson J. Morrison, Perkins Building, Tacoma, secretary.

Members of the retiring board were: George Gove, Tacoma; Julius Zittle, Spokane; and Harry H. James, Seattle.

MODERN ARCHITECTURE

Examples of modern architecture and elaborate housing projects were recently displayed in an extensive exhibit at the Henry Art Gallery, University of Washington, Seattle. The works of Frank Lloyd Wright, Walter Gropius, Raymond Hood, Le Corbusier, Eskil Sundahl and Von der Maie are included among the most advanced leaders in America and Europe.

ENGINEERS MAKE SURVEY

Henry D. Dewell and Wilmont Earl, 55 New Montgomery Street, San Francisco, have been commissioned by the trustees of the Crockett School Board to make a survey of the schools in Crockett to determine their safety in the event of an earthquake, and report on necessary improvements and reconstruction work.

SACRAMENTO SCHOOL BUILDING

Harry J. Devine, California State Life Building, Sacramento, has completed working drawings for a new school plant for the Grant High School District. A Federal grant of $154,165 has been allotted for the improvement.

HAYWARD SCHOOL BUILDING

Charles W. McCall, architect of Oakland, has been commissioned to prepare plans for a one story school building for the Valle Vista School District at an estimated cost of $12,000.

NEW MEMBERS OF STATE BOARD

Governor Rolph has appointed Harry J. Devine, architect, of Sacramento, to succeed Albert J. Evers as a member of the Northern Division, California State Board of Architectural Examiners. Mr. Evers had served on the board since 1926, being president of the Northern Section since 1930.

Mr. Devine was named to the term ending January 15, 1935.

Reappointment of four other board members, three in the northern section and one in the southern section, was announced also by the governor.

Architect A. M. Edelman, Los Angeles, president of the Southern Section of the State Board, was reappointed to a new term ending January 15, 1938.

H. H. Gutterson, San Francisco, and W. C. Perry, Berkeley, were reappointed to terms expiring January 15, 1936.

At a joint meeting of the northern and southern sections H. H. Gutterson of San Francisco was elected president of the northern section to succeed Mr. Evers.

The annual meeting of the State Board of Architectural Examiners, which is composed of the five members of the northern section board and the five members of the southern section board, will be held on the second Tuesday in April.

PERSONAL

Marc Thompson, recently employed in some of the New York offices, is now with Whitehouse and Price, Spokane. Edward J. Peterson, a graduate of Washington State College and the Harvard School of Architecture, is also with Whitehouse and Price as draftsman. Mr. Peterson recently had a group of interesting water color sketches of the Harvard campus on display at the Grace Campbell Museum, Spokane.

Stanley A. Smith of Seattle, is making a survey of farm homes and getting out a bulletin on farm houses.

A committee of engineers consisting of Charles H. Paul, Dayton, Ohio; F. C. Herrmann, San Francisco, and Lieutenant Colonel Thomas M. Robbins, San Francisco, has been appointed by Colonel H. M. Waite, deputy public works administrator in Washington, to review and report on the 21 projects in the Los Angeles county flood control program, for which an allocation of $33,000,000 Federal funds has been asked.

Glenn Stanton, of the firm of Whitehouse, Stanton and Church, Portland, Ore., has returned from Long Beach, where he visited with his family over the Christmas holidays.

ENGINEERS BUSY

The San Francisco structural engineers have more work in their offices than for some months, due to structural changes to many of the school buildings made mandatory by the new California State earthquake law. Among the new commissions given out by the San Francisco Board of Public Works to engineers are the following: Repairs to the elementary school, Bush Street, near Polk, Earle L. Cope, engineer; repairs to Spring Valley School, Jackson Street, between Larkin and Hyde, H. J. Brunnier, engineer; repairs to Jean Parker School, Broadway, between Powell and Mason, Will P. Day, engineer; alterations to Golden Gate School, Golden Gate Avenue, between Pierce and Scott Streets, Alfred P. Fischer, engineer; structural changes to the Denman School, Fell and Pierce Streets, H. C. Vensano, engineer.

FOR TIMES LIKE THESE

"Every architect should have an alternative occupation, one that will not clash with his practice of architecture."

That is the lesson impressed upon Harry H. James, architect of Seattle, and member of the Washington State Architects Examining Board, by his experience during the economic depression just beginning to vanish.

Such an avocation, if carefully chosen, Mr. James believes, will provide the architect with partial support during dull times. Such foresight is valuable because the architectural profession is dependent upon prosperity for full-time employment of all of its members.

ABEL HOSMER

Abel Hosmer, 86, pioneer stone contractor, San Francisco, died January 29 at his home, 292 Perry Street, Oakland, following an illness of three months.

Hosmer, a native of Deer Island, had lived in the Eastbay since the early eighties. With his twin brother, the late William Hosmer, he built several buildings on the University of California campus, including Wheeler, Boalt, and California halls, the Doe Library and also the campanile For years Mr. Hosmer was associated with the Raymond Granite Co., which supplied stone for many of San Francisco's early day buildings.

PRIZE WINNER

Don Gochnour, Sunnyside, Washington, a student of architecture at the University of Washington, was one of the prize winners in a recent sketching competition. His subject was "Trees on the River." His reward is a two-year subscription to an architectural magazine.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.

Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—

Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $16.00 plus cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 83.00 per M
4x12x12 in.	91.00 per M
6x12x12 in.	119.00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 91.00
6x12x5½	70.00

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.

Mosaic Floors—80c per sq. ft.

Duraflex Floor—23c to 30c sq. ft.

Rubber Tile—50c per sq. ft.

Terazzo Floors—45c to 60c per sq. ft.

Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs.	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	1.10 cu yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND

Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.

Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b. Job, S.F.) $2.75 per bbl.
Cement (f.o.b. Job, Oak.) $2.75 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" $8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor 12½c to 14c per sq. ft.
4½ inch Concrete Basement floor 14½c to 16c per sq. ft.
2-inch rat-proofing 6½c per sq. ft.
Concrete Steps $1.25 per lin. ft.

Dampproofing and Waterproofing—

Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—

Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—

Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—

Ten-foot balcony, with stairs. $75.00 per balcony, average.

Glass (consult with manufacturers)—

Double strength window glass. 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 80c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—

Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

Common, $30.00 per M (average).
Common O.P. select, average, $34.00 per M.

1x6 No. 3 Form Lumber	$22.00 per M
1x4 No. 1 flooring VG	50.00 per M
1x4 No. 2 flooring	44.00 per M
1x4 No. 3 flooring	32.50 per M
1x6 No. 2 flooring	46.00 per M
1¼x4 and 6 No. 2 flooring	55.00 per M

Slash grain—

1x4 No. 2 flooring	$44.00 per M
1x4 No. 3 flooring	38.00 per M
No. 1 common run T. & G.	36.00 per M
Lath	5.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ .90 per bdl.e
Redwood, No. 2	.70 per bdle.
Red Cedar	.85 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.
1 1-16x2¼" T & G Maple	132.00 M ft.
⅞x3½ sq. edge Maple	140.00 M ft.

	13-16x2¼" T&G	⅝x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	

Laying & Finishing 13c ft. 11 ft. 10 ft.
Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—

O. P. $100.00 per 1000. R. W., $106.00 per 1000 (deivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $7.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work ..... 40c per yard
Cold Water Painting ..... 10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.40
2 coats, lime mortar hard finish, wood lath	.50
2 coats, hard wall plaster, wood lath	.50
3 coats, metal lath and plaster	.90
Keene cement on metal lath	1.10
Ceilings with ¾ hot roll channels metal lath	.65
Ceilings with ¾ hot roll channels metal lath plastered	1.30
Shingle partition ¾ channel lath 1 side	.60
Single partition ¾ channel lath 2 sides 2 inches thick	2.00
4-inch double partition ¾ channel lath 2 sides	1.20
4-inch double partition ¾ channel lath 2 sides plastered	2.25

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.60
3 coats Medusa finish No. 18 gauge wire mesh	2.90

Wood lath, $4.00 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $16.40 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

Chapter and Club Meetings

NORTHERN CALIFORNIA CHAPTER

Northern California Chapter, A.I.A., held its regular monthly meeting at Marquard's, San Francisco, January 30, Albert J. Evers presiding.

Irving F. Morrow, Northern California District officer of the Historic American Building Survey, briefly outlined the work being done under this C.W.A. project for the assistance of architects. Mr. Allen expressed the opinion that the measured drawings of historic buildings which are being made under the Survey would be of great interest and benefit to the profession if published. His motion that a letter suggesting such a course be sent to the chief architect of the national parks was unanimously favored.

Mr. Johnson thought that the California Book Club might likewise be interested in this matter. He was appointed to bring it to the attention of the club.

At the suggestion of Mr. Donovan, the Public Information Committee was requested to confer with Mr. Morrow to program and disseminate news of this C.W.A. project in order to establish proper realization of its value with the public.

Mr. Donovan's motion that a telegram be sent to President Franklin D. Roosevelt with felicitations on his birthday was unanimously carried.

Mr. Garren reported committee action in the matter of investigating the blue-printers' new scale of charges. The report was accepted.

As a point of information, Mr. Roeth asked for the attitude of the Chapter in its approval of competitions such as the one recently conducted by the City of Paris Department Store. Mr. Evers explained the circumstances surrounding this competition and indicated that the directors saw no harm in it or infraction of the Institute code.

Mr. Gutterson then explained, because of its bearing on the subject, a pending project under Chapter auspices for the design and building for sale of three houses to provide funds for a newspaper publicity program in the interest of public information.

Others voiced uncertainty of the obligation which might be brought upon the Chapter should the enterprise be a failure. The architects' proper compensation for designing the buildings likewise was discussed. The matter was tabled until a later meeting.

Mr. Evers reported on local C.W.A. relief projects for the needy architects and draftsmen other than the Historic American Building Survey. Continuance of all this work was held necessary if the benefit which has come to these men is not to be stopped. Mr. Donovan moved that letters be sent to President Roosevelt, Secretary Ickes and Director Hopkins, stressing the Chapter's appreciation of the value of this work and appealing for its continuance beyond the expiring date of February 15.

Following the disposal of business, the meeting was turned into a "clinic" for the discussion of "New Finishing Materials and Their Uses." Three talks were presented as follows:

Wood—Wm. C. Hays.

Metals—Nathen O. Larsen of the firm of Miller and Pflueger.

Glass—George R. Klinkhardt.

The members were benefited by a wealth of definite information pertaining to the esthetic and practical qualities of each material and the efficient and economic methods of applying it.

J. H. M.

SOUTHERN CALIFORNIA CHAPTER

Southern California Chapter, A.I.A., commenced the new year with an ambitious program of activity. The Chapter held its annual meeting January 16 when the new officers were given a vote of confidence and assurance of enthusiastic support.

Sumner Spaulding, incoming president, and Ralph C. Flewelling, vice-president, presented an organization chart on which was outlined the proposed activities and, after explaining its chief purposes, Mr. Spaulding called upon members of the Chapter to give their views as to the best means of accomplishing these purposes.

Myron Hunt spoke of the avenues of approach and the methods that may be used on public service projects. He cited cases of architects who had taken an active part in the work of civic organizations, resulting in benefits of real worth to the profession. Fields that are especially open to architects, according to Mr. Hunt, are planning commissions, park commissions and Community Chest activities. Fraternal organization work has possibilities for building confidence and ability in a man. Back the Institute, the Chapter

and the State Association, Mr. Hunt concluded, and if you wish to render a service to your fellow men go at the thing with public service in mind.

The problem of the unemployed draftsmen and suggested plans for creating employment for them were submitted by H. Roy Kelley, who stated that the Chapter could be of real help in working out a remedy for this situation.

A movement to establish an institution that would be of practical use to architects was advocated by H. C. Nickerson. Laboratories would be provided, such as are available to engineers, doctors and other professional groups, where an architect or student could study and test materials. The founding of an institution of this nature would undoubtedly receive the support of interests allied with the architectural profession, according to some members of the Chapter. D. C. Allison reflected Mr. Nickerson's views on the subject.

The question of increasing the budget was presented by Henry Carlton Newton, who said the Chapter was faced with a deficit at the end of 1934 as income, in view of reduced dues. Members of the profession who are doing the largest amount of work should carry the bulk of the burden, Mr. Newton stated, and dues should be established at a minimum of $10 and scaled upward in accordance with the amount of business a member does. "In order to accomplish the constructive program we must carry on," he said, "and a larger budget must be provided." He concluded with the statement that the Chapter could not regain leadership of the construction industry on the present budget.

Following the annual reports of the outgoing officers, which opened the meeting, Mr. Spaulding appointed A. F. Rosenheim advisor to the chair in which capacity he will act during the present administration.

J. E. Allison spoke of the credit due Assistant Secretary of the Treasury Robert, who proposed the $400,000 fund set up for restoring historic buildings and who was responsible for the help extended to artists. Mr. Allison submitted what he termed a double-barreled resolution, wherein he first called attention to the innumerable problems that have confronted the Chapter administration during the past two years, and moved a standing unanimous vote of thanks to Gordon B. Kaufmann.

Reports were read by the retiring president, Gordon Kaufmann, and the newly elected vice-president, Ralph Flewelling. The latter, somewhat of an idealist himself, reported an ambitious program outlined by the executive committee—a program replete in the interrogative suggestions and savoring strongly of idealism. To quote:

"Is it too much to ask that this Chapter interest itself in the problems of our civic community—the project of the development of the Los Angeles River bed into a park system? To date this work is being performed by others not suitably trained or fitted as we are for its guidance.

"Is it too much to ask that we concern ourselves in the putting to work of our trained talent in the development of a well studied long range program for the improvement of our boulevards, streets and parkways, rather than leaving such talent wasted in pick and shovel work that produces no ultimate gain but offers the quickest preventative to starvation—only because we, the ones who can organize and can plan, are too dead on our feet to do anything about it?

"Is it too much to ask that we, through the use of such talent, should produce the much needed survey of housing conditions in our metropolitan area, thus being in position to offer authoritative opinion on the practicability of any housing proposals on which the Federal authorities need advice?

"Is it too much to ask that the only members of the construction industry able to do so should take the lead in the establishment of a school for research in the sciences, arts and crafts of the industry, which school would develop and perpetuate the ideals of craftsmanship and progress in processes and materials for which this organization has stood since its inception? Especially, when such leadership would call for no financial outlay on our part, but only intelligent leadership, constructive thought and hopeful imagination.

"Is it too much to ask that the members of this Chapter fortify themselves for concerted united action in all civic relationships by adopting a fair sportsmanlike competition program for county and city public works, thereby eliminating once and for all public criticism of political patronage and placing ourselves on a dignified professional plane?

"Is it too much to ask that this Chapter adopt an aggressive policy of professional publicity to inform the public of their need for our profession in the development of this community?

"Is it too much to ask that each member of this Chapter, in view of the fact that without the well being of the profession as a whole, he can soon no longer exist as an individual practitioner—that he, each member should subscribe for the advancement of the common interest, over and above the minimum dues, a nominal sum based

entirely on his ability to pay as measured by the extent of his practice?

"Is it too much to ask that this Chapter become again imbued with the ideals that prompted its founders—ideals which like the old dress suit have been hung in the closet too long and have become a little dusty, but which when renovated to the needs of a new age may prove to be of everlasting benefit to society in general and ourselves in particular?"

PRODUCERS' COUNCIL LUNCHEON

The first luncheon meeting of this year's series, being presented by the Producers' Council Club, which is an organization of national manufacturers of building materials affiliated with the American Institute of Architects, was held Monday, February 12th, at the Commercial Club, San Francisco.

C. S. Dean of the Westinghouse Electric and Manufacturing Company, gave a talk on "Fuseless Buildings and Homes." The speaker described the "No-fuse Circuit Breakers" which entirely eliminate the use of fuses. The "De-ion" principle of arc extinction incorporated in these breakers is considered to be one of the most outstanding electrical developments since the introduction of the electric lamp.

Several demonstrations were made to add interest to Mr. Dean's talk.

OREGON CHAPTER

Jamieson Parker was elected 1934 president of the Oregon Chapter, A.I.A., at a meeting held January 16, in the Chamber of Commerce Building, Portland. Leslie D. Howell and Herman Brookman were re-elected secretary and treasurer, respectively. Carl Linde was chosen for the vice-presidency. William Crowell is the new trustee.

Activities of the Oregon and Washington Chapters in conjunction with the Federal Government on the Historic American Building Survey were described by President Parker and Ernest Tucker. O. R. Bean, Portland city commissioner and architect, talked on the Rose City's building problems.

TACOMA SOCIETY OF ARCHITECTS

The Tacoma Society of Architects is studying prospective and actual work of the CWA as they relate to architects, draftsmen and artists. On January 2 the society held a discussion under leadership of Ernest T. Mock on artists' work for school service. The project for recording historic buildings and monuments occupied the time on January 8. At this meeting Ralph Bishop gave a sketch talk on his recent trip to California.

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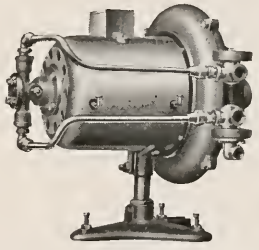

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Here is Johnson's latest refinement in Automatic Oil Burners. This is the Type B-2, designed for homes requiring from 330 to 1385 sq. ft. of steam radiation.

It operates on Pacific Diesel Oil and is available in two sizes for either pump or gravity feed fuel supply.

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•W. C. Hays, member of the jury, will tell how the selection of winning designs was made and why.

•Every architect and draughtsman should have this number. Order your copy now.

Can Uncle Sam Legislate Prosperity?

By A. W. ROBERTSON

THE United States Government is spending three billion, three hundred million dollars on public works. In 1932 the American people, at the bottom of the depression, spent approximately four hundred billion dollars in the buying of goods and services. These figures are startling. Even taking into account the various processes of turnover taken by our public works dollars as they multiply themselves, appearing and reappearing in pay rolls in the purchase of materials, in consumer purchases, in retailer purchases, in wholesaler purchases, etc., etc., still this public works program of the United States Government amounts to only a small fraction of what Mr. Public Citizen spent in one year of depression.

If we study these figures for a moment we see how much more important individual and corporate spending is than governmental spending. A 10 per cent increase in what the consumer, corporate and individual spends would amount to forty billions of dollars, or more than ten times the amount the Government is spending on public works. A comparison of this nature shows definitely that the normal exchange of goods and services by persons and corporations is the base upon which business and business recovery must rest. Government cannot, by spending or by law, create good business. It can feed us and clothe us, perhaps, for a time but it cannot legislate prosperity.

Practically all spending is for future needs. We buy clothes to wear tomorrow. If we knew we were going to die tomorrow we would not buy the clothes, or at least we would buy only one suit. We build houses to live in tomorrow. We build ships to sail in tomorrow. The buying and selling of goods and services is stimulated or retarded by persons and corporations directly as they have confidence in the future. Unless tomorrow has a pleasing and definite outline we put off buying until we see its outline more clearly.

Now that NRA, AAA, CWA, etc., are swinging into action, the future is beginning to take a more reassuring form than it had a few months ago. In other words, we are getting used to the present, so that our tomorrow begins to take on the form of something we understand and for which we can plan. As this concept becomes more definite in our minds, and we gain confidence in this tomorrow, our buying of goods and services will increase, which means the end of the depression and better times for everyone.

FACING REAL ESTATE FACTS

Willard L. Thorp, Director of the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C., was the principal speaker at a meeting of the National Association of Real Estate Boards, at Coral Gables, Florida, January 19. He said in part:

At this very moment, there are about 10 thousand individuals scattered all over the country engaged in a door-to-door canvass in connection with a project bearing the awesome title of The Real Property Inventory. One month ago, these individuals were all unemployed. They are "white collar" people,—clerks, bookkeepers, accountants, realtors, architects, engineers, and the like. Now they are working thirty hours a week. Some of them must wonder whom they are actually working for. They were instructed by the Federal Reemployment Service to report to the Bureau of Census which is directing the field work of a project proposed and planned by the Bureau of Foreign and Domestic Commerce and paid for by the Civil Works Administration. It sounds complicated, and yet it is really a most effective arrangement. Of course the most important thing is that those who are unemployed are now working for pay, and next that we are going to have some real information in the real estate field.

There has been increasing concern in recent months over the fact that the recovery program, by giving purchasing power to farmers and industrial engineers, was aiding chiefly the industries producing consumers' goods. No one would deny this development, but nevertheless it is a fact that the decline in activity during the depression has been most severe in the capital or durable goods industries. The public works program is able to touch only part of this field. Therefore more and more thought is being given to the problem of taking additional steps towards reviving activity in the capital goods field.

Construction is unquestionably an industry which fluctuates between extreme prosperity and extreme poverty. The Federal Employment Stabilization Board estimates the national construction total, all types, as $11.5-billion for 1929, or more than one-eighth of our entire national income. Probably the figure for 1928 was even higher than for 1929. I hesitate to introduce any clouds into your visit in this delightful spot, but one cannot discuss the need for facts in the real estate field without remarking on its great instability at present and in the past.

You will undoubtedly be very much interested in a study concerning national income recently completed by the Bureau of Foreign and Do-

CERTIFIED ADEQUATE RED SEAL STANDARD WIRING

Dear Mr. Architect:

If there are any school boards among your clients we think you might have some influence with them on lighting conditions in schoolrooms. Here is an excerpt from an article in a recent issue of Pictorial Review (reproduced by permission):

"Just how handicapped children are by inadequate school lighting has been proved with great clearness by a study made in a school in Tuscumbia, Ala. Mr. F. C. Albert, the engineer who conducted the experiment for three years, presented his paper last August at the annual convention of the Illuminating Engineering Society. The findings are intensely interesting.

"Two classrooms of the same grade were selected for the test. In each the children were about the same age and had similar mental capacity as established by intelligence tests. Not only did they pursue the same course of study, but their teachers interchanged certain class work. Now, one of these rooms was lighted in the usual way by two 150-watt ceiling fixtures, hand-controlled by a wall switch. In the other room were installed four 300-watt totally indirect fixtures controlled by a photoelectric relay. This automatic switch was set to turn on the lights whenever a cloudy condition reduced the natural light in the section of the room farthest from the windows to twelve foot candles or light units.

"What happened in these two classes so unequally lighted is a lesson to the entire country, for in the adequately lighted room there were only nine unconditional failures during three years, and in the other room there were twenty-nine. Aside from the discouragement to a youngster forced to repeat a grade, just consider the expense to the community of such retardation.

"The cost varies in different parts of the country, but you have the basis for an estimate from the fact that in Tuscumbia the annual cost of educating each pupil in the school selected for the test was $28, whereas the additional electricity used in the control room cost $24.33 per school year and served all the class equally. No wonder Mr. Albert said in the conclusion of his report, 'Controlled classroom lighting will pay for itself in dollars and cents.'"

There are sight-meters which accurately measure the light in a room. They are available through this Bureau. And you will be interested to know that the Electrical industry in 1934 will center attention on schoolroom lighting in this area.

Cordially yours,

Pacific Coast Electrical Bureau

DEPT. - J-2

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mestic Commerce in accordance with a Senate resolution. In dealing with construction, only that done by private agencies in the field is included, so that work done by various branches of Government, or by industrial organizations using their own forces, is excluded. In 1929, the estimated total under this definition is about $7-billions. The number actually employed in these projects was about 1.5-million persons. Slightly over 3-million reported themselves in the 1929 Census of Occupations as being attached to the entire industry. Perhaps 800-thousand of these were in branches of construction activity covered elsewhere in our study—Government construction, for example—and the remaining 700-thousand were unemployed. I am now speaking of 1929.

For 1932, the projects covered by our definition totaled only $1.7 billion, or only 24 per cent of the 1929 figure; the number engaged had dropped to 44 per cent, while the number employed had declined to 37.2 per cent. Our estimates for subdivisions of these groups show clearly that private construction, chiefly housing, has shown by far the greatest decrease.

If one wishes to determine what this decline actually means for various groups in the industry, the figures are extremely significant. After payments were made for materials in 1929, more than $3.1-billions were disbursed to those directly connected with the industry by labor or property right. In 1932, the similar item was $863,933,000. The way in which this was disbursed was as follows:

	1929	1932	Per cent
	Millions of Dollars		Decrease
Compensation paid employees	2,620	689	73.7
Dividends	62	4	93.7
Interest	17	11	37.6
Withdrawals of entrepreneurs	436	160	64.3
Total disbursed	3,135	864	73.0
Total produced	3,082	774	74.9
Net loss	53	90	

There is material for an entire speech in this brief table. Its cold statistical figures depict the depression in an objective way, but it requires very little imagination to see the distress and misery which such a record implies. I am sure that if we had figures for 1933 they would be even more tragic, for contracts awarded for residential construction in 1933 were on a level even below that of 1932.

The record of disaster in the construction industry, and this is not the first time this has happened, is an excellent illustration of the failure of the supposed economic controls in an individualistic competitive society to function. There are at least two elements in the economic system which theoretically stabilize any industry. The

first is price and the second is the financial mechanism. The significant price in the real property field is rents. Presumably, when construction activity is excessive, rents fall and discourage further building. Likewise, when a shortage develops, rents advance and stimulate building activity. In this simple way, equilibrium is theoretically achieved.

This is a pretty theory. It may work in the long run, if one runs long enough; but it fails miserably to achieve any short-run stabilization. Rents are notoriously slow to react to outside influences. Furthermore, the period required to complete new buildings is so long that it is possible for an excess to be in process of construction before the controls begin to operate. More important is the fact that the construction of any one year is but a small fraction of the total supply of buildings in existence. Rents are influenced, however, by the total of facilities available. Consequently, wide swings in construction have only slow effect upon the rental situation. Also should be noted the fact that a surplus can not be removed, but persists in its influence for long periods of time. Finally, there is the fact that we are not dealing with a standardized product, but one in which changes in style, shifts in taxation, or the development of blighted areas can change the total picture very rapidly. I am citing all these conditions so familiar to all of you, as a basis for my argument that we must know much more than we do today about real estate if we wish to eliminate these wild fluctuations of activity in the field of new construction.

Likewise, the field of finance has not always been a factor making for stability and regularity. Construction activity, on any considerable scale, requires credit. But credit is a general term for loans made for many different purposes. Conditions quite apart from the real estate situation may affect the credit market and in turn influence the behavior of construction. Through proper financial controls, it would be possible greatly to influence the extent of construction. But there has never been any serious attempt to use this control for the purpose of evening out the wide fluctuations in activity in the building field.

* * *

There has been much talk in Washington about giving aid to building. But when several persons get together to discuss the matter, they quickly divide into two groups:—those who argue that there is a shortage, and those who insist that there is a surplus. The individuals who take the latter position offer three forms of evidence:—the great activity in construction during the years from 1923 to 1929, the high percentages of vacancy reported in most cities, and the fact that rents have fallen considerably. All

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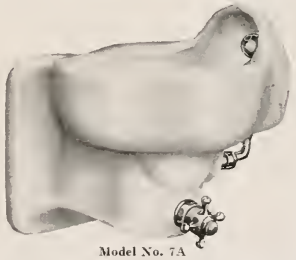

Model No. 7A

THE new Vallejo Union High School Building, Frederick H. Reimers, architect, is equipped with six Model 7A porcelain wall type Haws sanitary fountains, pictured above.

Finished in soft Persian brown they lend a touch of color to the school equipment. There is also a 10M-42" receptor type white porcelain fountain on the premises.

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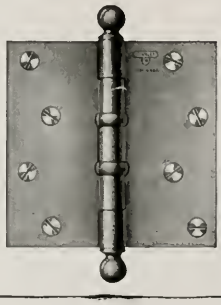

these indicate, they argue, that we are well supplied with housing facilities, and it would be absurd for the Government to endeavor to revive activity in this field at the present time.

On the other hand, others claim with equal insistence that a shortage exists. They claim that the post-war activity merely made up for the lean years during the war. They say that the high percentages of vacancy are spurious, being more than offset by doubling up and delayed marriages, so that with return of prosperity the shortage will become uncomfortably apparent. This will lead inevitably to another period of overbuilding. Finally, they insist that there are many houses now occupied which are not fit to live in.

Which of these groups is right? That is exactly what we hope to find out, along with a good deal more, from our Real Property Inventory. We were assured of funds to make this survey, early in December. Haste was necessary, since the field work had to be completed by February 15. We brought in representatives from various branches of the Government which were interested, and some technical experts from outside, including, I might mention, your own President, Mr. Nelson, and set to work preparing a schedule. We soon found that if we gathered all the information everyone wanted, it would require a questionnaire ten feet long. But by dint of persistent effort, we finally had our schedule in shape. It is intended to gather data for every housing facility in each city covered.

Although there are 32 columns on the schedule, they can be broken down into certain general categories. First are general descriptive data concerning each structure,—materials of which it is built, number of stories and number of rooms, and its physical condition. For the last item we are using four categories,—good condition, needs minor repairs, needs structural repairs, and not fit for use.

Second are the items relating to improvements and facilities available, covering such items as type of heating, uses of electricity and gas, water closets and baths, mechanical refrigeration, and the like.

Third are the items pertaining to occupancy and vacancy, including a record of extra families and material for computing density; i.e., number of persons per room. Of course this includes data on ownership or rental. In order to determine the turnover rate, we are asking each occupant when he moved in, and in the case of vacancies how long it has been vacant.

Fourth is the item of rents, including data on concessions or facilities provided by the landlord. This will give us one indicator of the quality of the vacancies in the various cities.

Fifth are certain miscellaneous items of use

primarily for other branches of the Government,—the number of automobiles if any, the time required and methods used of getting to work, and the question of whether or not the occupier had a vegetable garden last year.

We are now working on the possibility of making an intensive study of a limited sample of dwellings with regard to the financial structure underlying real estate properties. At present, there is only the sketchiest sort of data available with regard to the mortgage set-up for urban housing. We have been experimenting with such an inquiry in Cleveland, and may extend it to other areas if it seems feasible. Much of these data could be obtained from financial institutions, but we believe that direct inquiry from owners of property would yield additional information.

At present there is little light as to how to stabilize construction. Certainly we can no longer rely upon rents as our index of construction needs. We must know more about the situation than that—and we must have it more promptly. Only by analysis of housing needs and available facilities can we work towards these necessary guides. The government feels that this is of sufficient importance to spend $2½-million making a start. Are you prepared to carry on?

The phrase, "speculative building", is a familiar one. Yet it is not a healthy condition. Buildings ought not to be speculative. They should come into a market which needs them and where there is reasonable certainty. What form of real estate situation do you really and honestly desire? The sort I have in mind calls for courage and honesty on the part of real estate men. The surgeon must feel discouraged when he finds on examination that the patient needs no operation, yet the standards of the profession are so high that he disregards the loss of the fee and tells the patient the truth. You must do the same.

A PLEA FOR MORE FIRE-PROOF BUILDINGS

Only a small proportion of the apartments and residences in New York City have been constructed of non-inflammable materials, according to Mr. T. J. Foster, chairman of the Board of the National Bridge Works, who urges more fireproof construction.

Mr. Foster said: "What are new markets? We often think of them only as the sale of an entirely new product. Yet though a bathtub is not a new product to at least 50 per cent of the people in this country it would be a novel acquisition. A new market then may be no more than the application of an old product to a new field.

"An apartment house is not a new medium for steel, but in the city of New York only 3

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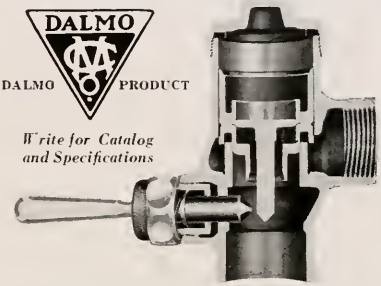

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per cent of the apartment buildings are fire-proof. Is it worth while for the steel industry to go after the other 90 and 7? When we consider the hectic bargaining that goes on over the 3 per cent we can only wonder what the prejudice is against the overwhelming balance.

"There are approximately 860,000 residence units in apartments in New York City. The average cost per unit in 1930 was $5,656. The average annual requirement for the past 10 years has been 45,619 units.

"I would be conservative to use for the potential annual requirement 45,000 units at $5,000 per unit, or a total of $225,000,000. The percentage used in walls, roofs, floors and partitions in the present structures is 44 per cent. We can duplicate this in non-combustible materials, about 40 per cent of which would be in steel, or $40,000,000 and this, divided by $70 per ton would amount to 570,000 tons of steel.

"Why not forget the 3 per cent that is safely in the fold and go after the other 97 per cent? About 50 per cent of the steel portion of this could be secured without any change in the building code, or the approval of any new construction. The balance could be secured when the proposed code becomes a law. There has been so much agitation, it has been so long since there was any change, and the need is so great that surely the time for adopting a new code is not far distant.

"Architects, engineers and builders are in a rut, and designs must be made for them. A large portion of the builders for the cheaper apartments have been irresponsible, and better builders must be drawn into the field. These days they are willing to be drawn. Labor is not anxious for a change and contractors do not care to take the trouble, nor are those who have been doing this class of work intelligent enough to introduce better methods.

"If non-combustible, shrink-proof, vermin-proof, and more sound-proof buildings were built at the same price as the present construction (and this is possible), money would not be obtainable for the poorer structures. Similar conditions no doubt prevail in the rest of the United States. Is not the 90 and 7 worth going after? A new market may, by this means, be simply an extension of use in a neglected field.

"It is more difficult to apply steel to single family residences than to multi-family buildings, and yet the country has gone a little wild in its endeavor to use great quantities of steel in the single residence, and has left the multi-family dwelling to solve its own problem as best it can."

DALMO MANUFACTURING CO. BUSY MAKING KRAMER FLUSH VALVES

Dalmo Manufacturing Co., with plant and headquarters at 511 Harrison St., San Francisco, California, and its subsidiary, Dalmo Sales Corporation, report many new orders for Kramer flush valves.

T. I. Moseley, president of the Dalmo Co., states that the Kramer valve department has been working two shifts for the past six months. After a most rigid test Kramer flush valves were accepted and are now being installed by the City and County of San Francisco for the new city and county jail, the order calling for 600 valves.

Among other recent installations are the Adams, Alvarado, Douglas, Edison, Emerson, Francisco Junior High, Grant, Hawthorne, Hillcrest, John Muir, and S. F. Girls High schools, San Francisco Civic Auditorium, The Emporium, San Quentin Prison, Sentinel Hotel, Harbor Police Station, Fort McDowell, Fort Scott, U. S. Presidio, de Young Museum, Bellevue Hotel, American Brake Shoe & Foundry Co., Pier No. 35, S. S. White Dental Manufacturing Co., Philadelphia, Pa., Tam Apartments, Shanghai, China, Moffitt Field, U. S. Quartermaster at San Francisco, Presidio, U. S. Navy Yard, Brooklyn, N. Y., U. S. Navy at San Diego, U. S. Lighthouse Service, U. S. S. Lupin and U. S. S. Sequoia.

Capacity to give lasting satisfaction under extreme conditions Kramer valves have passed the rigorous requirements of the U. S. Navy. Kramer construction makes this valve a leader for salt water service, due to its high resistance to corrosion.

"Sheer simplicity of construction of the Kramer flush valve makes for positive performance and low maintenance," said Mr. Moseley. "It is the absolute certainity of minimized maintenance and sustained service that adds so much to the value of building and the comfort and convenience of its occupant when Kramer flush valves are specified. Installations operating constantly for more than six years have required no maintenance, repair or replacement of parts. Such enduring satisfaction and economy is possible only with Kramer valves because it is inherent in the sheer simplicity of Kramer design and ruggedness of Kramer construction. There is nothing to get out of order or wear out prematurely. All parts which might cause trouble have been eliminated.

"Kramer flush valves contain no leather cup washer, no diaphragm, no by-pass port; parts which cause over 90 per cent of all flush valve trouble. Kramer construction obviates the possibility of corroded screw threads making plunger assembly difficult to remove, by eliminating all plunger screws and threads. The whole interior is made accessible by merely removing the cap."

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ASSURANCE BONDS

By G. Szmak, *Economist*

During the past several years contracting has become a nightmare. For many there is no longer any stability, security or profit in this business. The principal reason for this condition, of course, is that no one will pay for doing anything thoroughly, so, instead, great risks are being taken. Eventually, however, we all find, to our sorrow, that haste makes waste.

In order to avoid the unnecessary risks taken by the industry and the public, in a mad rush which gets them nowhere, there is now available to owners, architects and contractors a thorough service, in the form of a "Construction Assurance Bond," which eliminates the risk involved in construction contracting.

The plans and specifications of any project desired to be bonded are forwarded to the assurance company, which will prepare a complete survey and appraisal of all items involved to the extent of the work that is to be guaranteed against loss. The information is returned with the plans and specifications, accompanied by a bond guaranteeing the completion of the project at the assured construction price without loss to the buyer or seller, if bid within an allowed reasonable margin of safety. This service is applicable to sub-contracts as well as general construction.

There is a small bond application charge on each project. The price of the assurance bond is included in the cost of construction and is paid for by the buyer of the construction or building as part of the contractor's services. The fee of the assurance company is payable only on actually secured contracts.

This service does not add to the cost of construction because it does cut out both haste and waste, thereby making it possible to perform contracts to the satisfaction of both buyer and seller.

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MAYAN ARTICLES PRAISED

Of the many congratulatory letters received by Robert B. Stacy-Judd for his articles in this magazine on Mayan Architecture, the following from Dr. Ernest L. Tross, art-historian, of Los Angeles, is an outstanding example: Mr. Robt. B. Stacy-Judd, A.I.A. 2100 North Beachwood Dr.

Hollywood, California.
Dear Mr. Stacy-Judd:

With great interest I have read your two articles in THE ARCHITECT AND ENGINEER.

The plates, on pages 34 and 35 of the November issue, are more than an illustration of the development of Mayan art from naturalism to abstraction. They show the inventive and creative mind of artists in general and should be a revelation to all those who cannot understand modern abstract art. In our days, when our most modern artists break with a tradition of five centuries of naturalism and venture again into abstraction, such demonstrations of abstract art and how it happened to come into existence, are of utmost value and should be carefully studied by everyone interested in the subject of art and art appreciation.

There is no doubt that the Old Mayan Art is not inferior to the art of Egypt or Greece, and I always wondered why American architects never went back to it for inspiration, since its remainders are buried in the American continent.

I congratulate you to your missionary work, and I hope you will see your dream realized.

Most Sincerely Yours,
(Signed) ERNEST L. TROSS.

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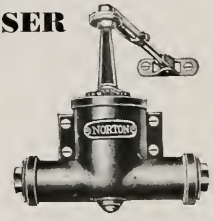

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THE ARCHITECT AND ENGINEER

MARCH 1934

...This Issue...

Prize Winning Designs in Suburban House Competition

Elmer Grey Writes About Art, Science and Religion

The El Capistrano Apartments, San Francisco

THE FREE SKETCH EVIL

Ravages of Termites a Serious Problem—Investigators Urge Protective Treatments

Architectural Studies for Bay Bridge Concrete Masses

Copyrighted 1933 by Pacific Portland Cement Company, San Francisco
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GOLDEN GATE BRIDGE PICTURED ON PACIFIC PORTLAND CEMENT CALENDAR

THE above is a reproduction of a copyrighted photograph of the Golden Gate Bridge featured on a 1934 calendar recently published by the Pacific Portland Cement Company and distributed to its many clients and friends. The composite photograph is so cleverly made that one receives the impression the bridge is completed and serving the traffic needs of the communities it links together.

The calendar picture is about six times the size of the engraving shown above. It is printed in warm sepia and for sheer beauty it would be difficult to duplicate. Extra prints are available for framing.

Exclusive rights to this copyrighted photograph have been secured at considerable expense by the Pacific Portland Cement Company whose Golden Gate cement is being used in large quantities on this world famous bridge project.

EDITOR'S NOTE. Permission was given for us to print this picture with copyright credit to the owner, but such credit was inadvertently omitted in the February issue when the cut was shown to illustrate a progress story of the bridge.

ADEQUATE CONTROL for Unit Ventilators!

Adequate control, automatic and dependable, is necessary where satisfactory results are expected from unit type heating and ventilating cabinets. Johnson is in constant touch with developments in the unit ventilator field. As changes and improvements are made, the Johnson organization conducts careful tests in order to determine the precise arrangement of temperature control apparatus necessary for the best results with the unit in question.

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Thumb Tacks and T-Square

IN Los Angeles where there is to be a great deal of reconstruction, rehabilitation and strengthening of school buildings, structural engineers were first appointed by the Board of Education and later architects were named to collaborate with the engineers on most every project. Cost of the improvements range from $30,000 to $250,000 for each project. Needless to say, there is little work for an architect on a $30,000 alteration job, but in Los Angeles he is given a commission just the same.

In San Francisco the authorities apparently decided that this class of work is for the engineer exclusively, for in only one instance to date has an architect been named. Referring to this policy of the San Francisco city government, a city official is quoted as saying: "The real needs of our public buildings are largely structural and the engineer is the proper one to employ for this type of work. If any outside embellishments are required he can hire an architectural draughtsman."

Something for the architects to think about.

⁂ ⁂ ⁂

WHY all these preparations for another earthquake? we hear asked by many people. They refer to structural changes to our public buildings required by the new California building laws. Those who belittle these precautionary measures remind us of the Kansas farmer who remarked:

"Now that the cyclone is over, we'll not likely have any more, so I'll just fill in the old cyclone cellar."

Also, the Governor of Mississippi who admitted it was a bad flood, "but it'll be a long time before we have another, so we don't need to build any more levees now."

"War is hell," said General Sherman, "but they'll never have another struggle like this one, so lets not have any more army."

"That bridge might go out under heavy strain," said the engineer, "but the chances are that it is good for at least two more years."

"It'll not be necessary to keep up the firebreaks," said the forest supervisor, "for we haven't had a fire in this forest for 20 years and besides it might frighten picnickers away."

Were it not for the alertness of our state officials we might have added to the words printed above this paragraph: "Severe earthquakes usually come at distant intervals. We only recently experienced a bad quake so it will probably be a long time before we have another. We can go on with our public buildings as they are for a few more years at least."

⁂ ⁂ ⁂

PLANNING seems a peculiarly timely subject right now. We are told by men conversant with all the facts and figures that there is a present shortage of 1,500,000 dwellings in this country, only concealed by the temporary condition that many families are living "doubled up." This will undoubtedly be strongly verified when we get the report of the real property survey that is now being conducted in some sixty urban areas by the Bureau of Foreign and Domestic Commerce and the Bureau of the Census.

One estimate from an official source is that this shortage, plus the normal future increase in the number of families, will require the construction of 800,000 units of housing annually for several years to come. One of these days, when economic conditions get straightened out, there will probably be a most extraordinary demand for homes. This may induce high prices, bad buildings, and a great many mushroom developments based upon no sound plan for the future. There is actually danger that the worst mistakes of the past may be repeated, or even outdone, unless we start now a comprehensive campaign of systematic planning.

⁂ ⁂ ⁂

GEORGE D. HALL, landscape architect, Los Angeles, will contribute an article on "The Landscape Architect in Institutional Planning," for next month that will be found of exceptional interest.

⁂ ⁂ ⁂

PREPARATION is progressing satisfactorily of the 1934 Northern California edition of the Construction Materials Index of selected technical data for architects, engineers, contractors and purchasing agents. The book will have approximately 80 pages substantially bound, and will undoubtedly be a valuable ready reference guide for those wishing up-to-the-minute information on architectural and building subjects.

The index will be placed free of charge in the hands of certified architects, construction engineers and general contractors. The publication will be issued annually, initial date of the first issue to be early in May. The Index is endorsed by the Northern California Chapter, A. I. A., and the State Association of California Architects. Data is being compiled and classified by E. L. Norberg, chairman of the Standard Committee of the San Francisco Chapter. The publishers of THE ARCHITECT AND ENGINEER have offered their hearty cooperation and back copies of this magazine will be made available to Mr. Norberg and his assistants to aid them in the compilation of data.

VOLUME 116
NUMBER 3

THE ARCHITECT AND ENGINEER

MARCH
1934

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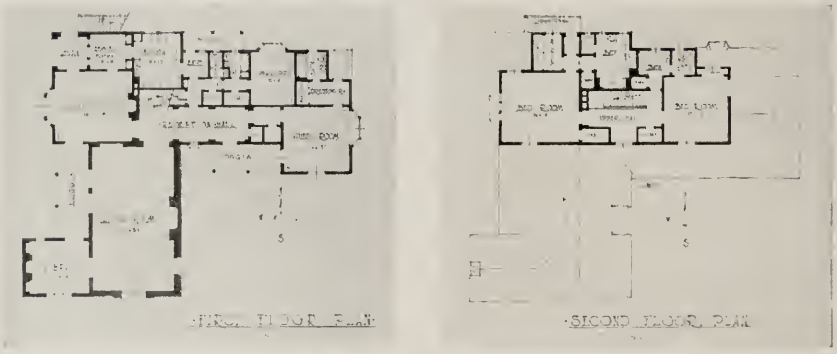
PRIZE WINNING DESIGN, A SUBURBAN HOUSE IN CALIFORNIA
Miller and Warnecke, Architects



PLANS, A SUBURBAN HOUSE IN CALIFORNIA
Miller and Warnecke, Architects

THE
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MARCH 1934
VOLUME 116
NUMBER THREE

COMPETITION FOR A SUBURBAN HOUSE IN CALIFORNIA

by
W. C. HAYS, Architect

An architectural competition for a Suburban House in California was sponsored recently by the City of Paris Department Store, San Francisco, and approved by the Northern California Chapter, The American Institute of Architects. The drawings were later exhibited at the City of Paris store where they were viewed by several thousand people. Below, Mr. Hays, Chairman of the Jury, describes some of the more interesting points that developed in the course of the Jury's deliberations; also a report of the Jury in full:

THE following notes, while they attempt to summarize opinions expressed in the judgment, must be understood to be fragmentary, to be the expression of an individual member of the jury and written with no intent or authority to commit his confreres to any ideas other than those brought out by the general discussion. A copy of the official report of the jury appears in connection with these casual comments.

The jury took its task seriously. Not only were the most deserving competitors to be justly rewarded; the exhibition, to be attended by thousands, would in effect constitute a presumably competent recommendation to the public of the premiated designs. The judgment, therefore, must be based on a systematic analysis of the program, with its direct statements, its indirect inferences and their interpretations. Frankly, some incongruities had to be faced for the official program described two possible corner sites, instead of one and, obviously, planning for a northwest corner or for a southwest corner are different problems. Furthermore, the accessory elements (swimming pool, etc.) seemed "ambitious" for a "single servant" establishment. These apparent incongruities were, however, essential parts of the program.

The jury, after checking all drawings received for compliance with the program, first examined all designs to "sense" probable solutions. In a second examination, a

PRIZE WINNING DESIGN, A SUBURBAN HOUSE IN CALIFORNIA
Vladimir Oglou, Architect

PLAN, A SUBURBAN HOUSE IN CALIFORNIA
Vladimir Oglou, Architect

preliminary grouping into three classifications was made. On re-convening for the third session the following morning, a general discussion took place in which all designs were reviewed, reclassifications were made, still maintaining three groups and thereafter the "third" group was set aside. More detailed discussion of each remaining design followed, leading to recapitulations and the crystalizing of the jury's ideas upon the program and its meaning. By this time it had developed by common consent that the following were among the important factors to be considered in making decisions:

1. The allotment of the major elements to the spaces most suitable for them upon the site.

2. Logical contiguity of these elements in the most "usable" relationship one to another.

3. Orientation, exposure and outlook—all of which "must be lived in"—must be the best obtainable.

4. Since choice of two distinctly different sites was permissible under the program, the relative merits of the northwest vs. the southwest corners must be only a minor factor, each design being judged on its merits as a solution for the chosen site.

5. The swimming pool, occupying as it necessarily does a large area, must not overwhelm the remainder of the project but must on the other hand be large enough to be practically useful. In instances where the pool was conspicuously placed, some designers employed clever devices to create a semi-formal transition to the garden. Others, placing the pool in the extreme inner corner or against the long property line, made highly desirable "hook-ups" with the sleeping quarters of the house. In any case the desirability of full sunlight about the pool is apparent.

6. With much relief the jury gathered that the "story-book" house and the "house of your dreams" was not indicated by the program.

A few outstanding faults which appear in many of the designs the jury commented upon:

a. Strange devices of vehicular circulation in the already none too large site. For example, two or more designs gave up approximately the front third to driveways, useful only for chauffeur-driven cars, and did not permit proper segregation from important foot paths. Another design was cut directly through the center by the traverse of a drive separating the house from its garden.

b. Many of the houses were much too large for the site.

c. A number of designers placed the house in the geographical center of the site —obviously a poor distribution of the land.

d. In some instances the main entrance to the house was confused and not clearly visible.

e. Very faulty "exposures" of important bedrooms were found in several otherwise excellent designs.

f. Impaired wall heights of second floor rooms were numerous in designs where a desire for "picturesqueness" ran away with good sense.

g. That some of these faults are found in "premiated" and "mentioned" drawings, as well as in other plans.

In summing up, it may truthfully be said that the jury feels that the participation was enthusiastic, that many excellent designs were submitted by authors whose names do not appear in either the premiated or mentioned lists and that the enterprise so generously promoted and financed by the City of Paris has been proved thoroughly justified. It is believed that the exhibit will have a definite educational value and that visitors to it will there find real inspiration.

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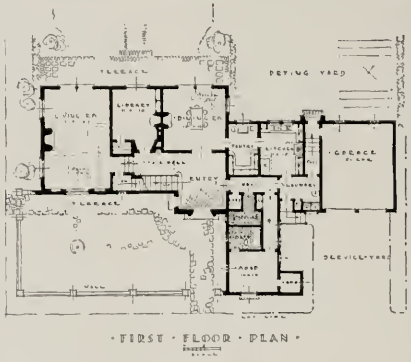
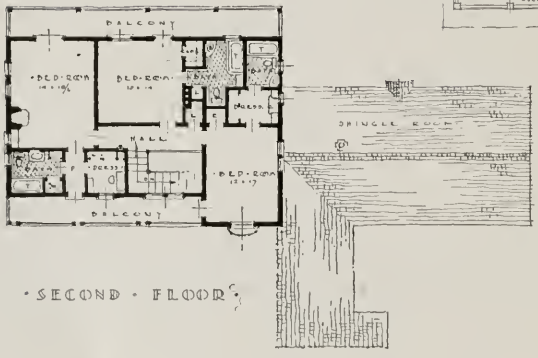
A Suburban House in California
James T. Narbett, Architect





PLANS, A Suburban House in California
James T. Narbett, Architect

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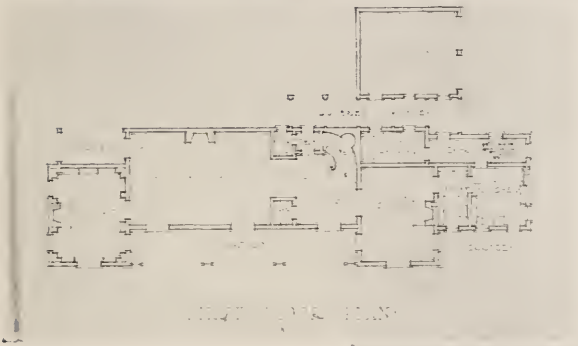

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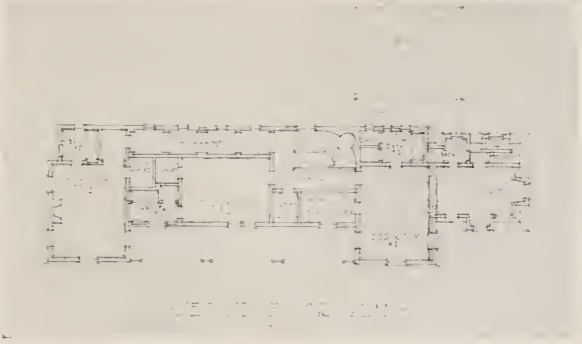

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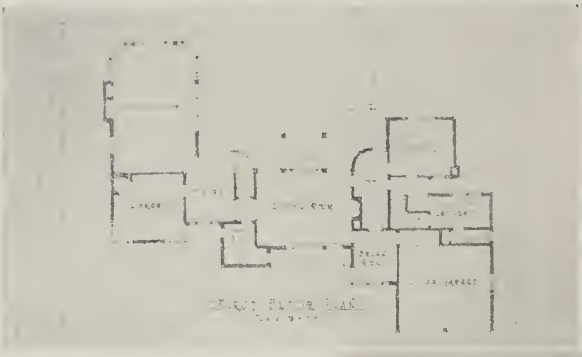
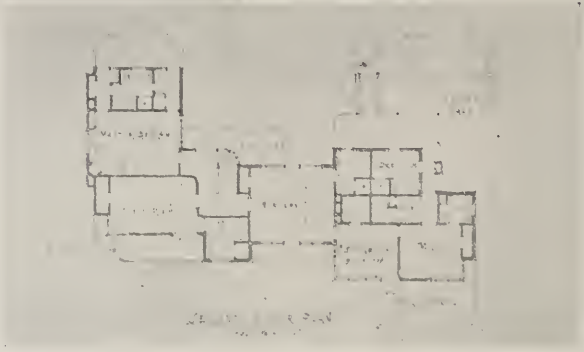
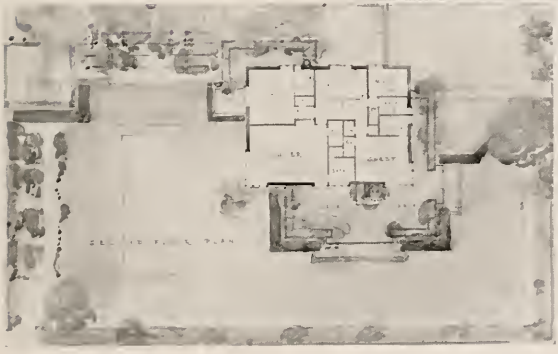
Ralph E. Wastell, Architect, and
John M. Evans, Associate





PLANS, A Suburban House in California
Ralph E. Wastell, Architect, and
John M. Evans, Associate

PRIZE WINNING DESIGN
A Suburban House in California
Warren Charles Perry, Architect



PLANS, A Suburban House in California
Warren Charles Perry, Architect

PRIZE WINNING DESIGN, A SUBURBAN HOUSE IN CALIFORNIA
Raymond W. Jeans, Architect

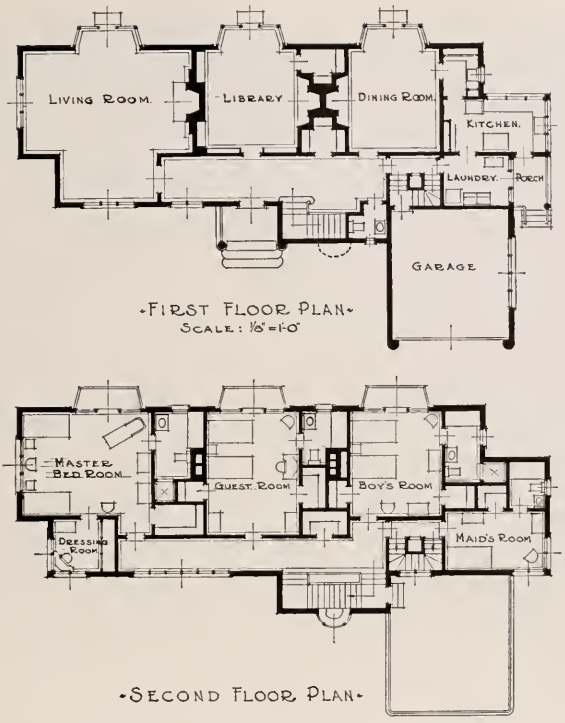
Report of Jury

To the Northern California Chapter
American Institute of Architects:

Your jury appointed to study the designs submitted and award the prizes offered in the City of Paris competition for a "Suburban House in California" has to report that a total of seventy designs were submitted.

The jury held five sessions during three days, in study of the program and in examination of the drawings offered. There was no balloting until the last session, and because of ample time having been taken in analyzing the problem, a verdict was easily reached. The jury unanimously awarded the eight (8) equal prizes—one hundred dollars each—to the authors of the designs numbered 8, 10, 22, 25, 28, 31, 43 and 56, these having all complied in essential respects with the conditions of the program. Eight other designs found to justify recognition were selected also for honorable mention.

After the making of these awards the sealed envelopes containing the names of the competitors were opened and the authors were found to be as follows: (listed in alphabetical order)



PLANS, A SUBURBAN HOUSE IN CALIFORNIA
Raymond W. Jeans, Architect

PRIZE WINNERS

Confer and Anderson
Cress, Edw. W.
Jeans, Raymond W.
Miller and Warnecke
Narbett, James T.
Oglou, Vladimir
Perry, Warren C.
Wastell and Evans

HONORABLE MENTION

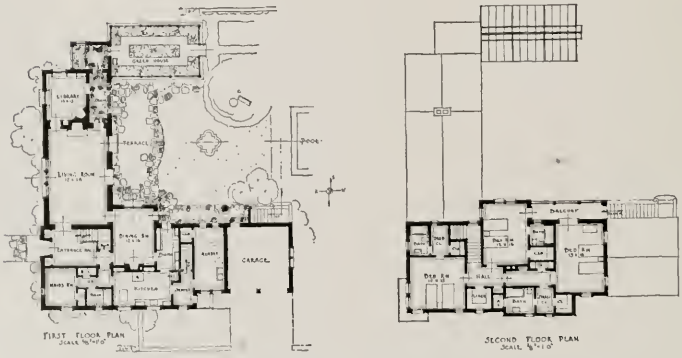
Bartges, Wm. J.
Goodman, Michael B.
McDougall, Benj. G.
Morrow & Morrow
Newsom, Noble and Archie T.
Rich, Wm. A.
Schary, Harry A.
Schirmer, Wm. Edward

The jury takes much pleasure in noting that a large proportion of the designs showed distinct merit, that the participation was enthusiastic, and that the results, in our opinion, more than justifying the impulse which prompted the generous project, will prove of benefit to both the public and the architectural profession.

Respectfully submitted,

Wm. C. Hays, Chairman.
Roland I. Stringham,
Paul Verdier.

PRIZE WINNING DESIGN, A SUBURBAN HOUSE IN CALIFORNIA
Edward W. Kress, Architect



PLANS, A SUBURBAN HOUSE IN CALIFORNIA
Edward W. Kress, Architect

ART, SCIENCE AND RELIGION

by
ELMER GREY, Architect

IN the ordinary routine of work and living some of us are inclined to stop at times and wonder what relation our work bears to that of all the rest of the world. We hear scientists talk about atoms and molecules, see much space devoted to the subject in the daily papers, from which we conclude that the work of these scientists is very important. Then in the field of religion we hear men like Henry Ward Beecher and Lyman Abbott extolled for their very different kind of work. And in spite of this we occasionally hear of some scientists scoffing at religion and some religionists looking askance at science. So, in this muddle of different activities and conflicting opinions, some of us wonder at times just where art and architecture come in.

We know that architecture serves a very useful housing purpose, but how about its artistic side? — why is it important that buildings be beautiful? And what part, if any, should religion play in our lives?

Perhaps the reason for all this lack of clarity between different human activities is because the world's knowledge and work are too vast for any one man or set of men to take them all in. They have been divided up into smaller classifiications such as science, art, religion, etc., but we are all of us somewhat inclined to misunderstand those portions with which we are not directly associated. Let us examine some of these classifications and see what relation they bear to one another and to our own work.

Science abstracts from the sum total of human knowledge various departments which it calls physics, chemistry, biology, etc. It so isolates these departments in order the better to study them. Religion separates another branch of knowledge for a similar purpose. The conclusions of science are attended by accuracy, precision and definite foundations, while those of religion are not; but that does not make the former the more valuable. For in the process of abstracting science from the sum of knowledge much that is valuable is lost. Educators recognize this and try to atone for it when they include the so-called "humanities" in the curriculums of their technical schools. Goethe has pictured it in his verse:—

"The man who seeks a living thing to know,
First seeks to drive the soul out—so,
Then the parts he can hold in his hands
and class,
But the soul and the spirit are gone alas!"

Hamilton Wright Mabie has expressed the same thing in the words: "Life is fed by unseen streams quite as fully and constantly as by those streams whose course Science traces with admirable precision and accuracy."

Dr. Millikan's recent discoveries regarding the nature of the electron and the probable present-day transformation of energy

into matter* have brought Science and Religion much closer. When Pyhsics arrives at the point where it has determined that the fundamental processes of creation are still going on, the question of the nature of that which is back of these processes naturally arises. Thus Physics approaches Metaphysics—and from there to Religion is but a step. But Physics does not intend to invade Metaphysics. Its province is the investigation and formulation of laws governing physical phenomena only; and to a layman like myself it seems unfortunate that it does not go further—for at this point it encounters two restricted situations. One, that it stops at the very point which most interests a large part of humanity. Humanity at large is not interested in the electron but in what the discoveries concerning it will do for its immediate problems; nor so much in the disclosures of Science as in their practical application to mankind's benefit. The other restricted situation is that all physical phenomena do not originate in physical causes alone. Many in which humanity is vitally interested have casual phases that are beyond the scope of either physics, physiology or biology. Brother Lawrence's budding trees in the Springtime is an example. Human life itself is another, and one so common that we are prone to forget the wonder of it.

Brother Lawrence's tree, of course, requires water, sunshine and good soil in order to thrive; but if it did not also have that which inspired the monk to Godliness it could not exist. Likewise our bodies require proper food and fresh air; but our health and our very lives also depend upon that which is beyond the ken of physical science. This is recognized by physicians when they count upon our mental states as important factors in determining our health. It is what accounts for the success of health-seeking outside the domain of the regular physician. The Scientist "cannot guide us to any aspects of reality that lie outside the limits of his own science" Lord Haldane tells us, "but by separating off these aspects in abstraction, he can enormously extend our knowledge."

Certainly the religionist should heartily welcome all such extensions of knowledge, for they vastly increase his understanding of the nature of God's Universe.

If we wish to pick up the thread of truth where Science leaves off we may do so to a certain extent by studying philosophy or Religion. Philosophy will lead us into a profound and ponderous system of abstract thought, such as Hegel and Kant found it necessary to use. Religion gives us more intimate language and leads us to books which have been sources of comfort to millions of men for ages. Napoleon, it is said, was asked whether he believed in a God, and by way of reply pointed upward, saying, "Who made the stars?" In some the religious sense is inspired by great cathedrals with their wonderful glass and grille work, and by the impressiveness of their ritual. In others the solitude of the hills and other aspects of nature far from the haunts of men better meet the requirements. To me it is met as well perhaps by the good things of everyday life as by anything. As the late Basil King has put it. "In general, we take our good things for granted, complaining that they are not better. Having hung, as it were, a cloud about ourselves we disregard the uncountable ways in which God persists in shining through, in spite of our efforts to shut Him out." He then tells of a number of the good things about him that make him glad that he is living and which he attributes to the goodness of God. To make his point clearer I should enumerate them, but I happen to be amply provided with a list of my own! On a balcony of my home in Pasadena that

*Bulletin of the California Institute of Technology, June 1928.

is almost surrounded by Cecil Brunner roses, I slept out-of-doors. At night the still trees about me and the distant stars overhead are my silent guardians. Beyond, in the distance, slumbers a portion of the San Gabriel valley. In the opposite direction loom silhouetted mountains. An outside staircase leads from this balcony to a secluded garden below where, during the day flowers may be seen to bloom, the lawn is green, a fountain plays in the recesses of a pergola and birds add their song. Within the house are comfortable couches, an open fireplace, paintings, rugs, books and a radio. Then there are my automobile, my food, my friends and interesting work! As I awake mornings and the warm California sun peering over the mountains caresses my face, I think of all these good things and am grateful for them. Almost everyone could count up similar blessings in their lives to a lesser or greater extent, none of which are fundamentally of man's origin.

Religion calls our attention to such and to all of our benefactions and fills the normal mind with a desire to acknowledge their Source. As a study it has not the exactness of Science, but when exactness reveals but a part of knowledge, is it not reasonable to accept assumptions for the rest? Scientists themselves do this when they assume hypotheses which frequently have to be verified and corrected. The fragmentary character of any of our knowledge should make us all tolerant of those who delve in other fields.

In its latest advances Science has approached so close to the domains of Religion that only a narrow "no-man's-land" now lies between. Indeed, even this no-man's-land has virtually been invaded by Science; for some of its leading exponents have had the courage to enter it and announce their conviction that it is basically spiritual in character. Some of these opinions are given in an article in the February 1930 number of *Scribner's* magazine by Robert Millikan. Besides citing the opinions of others, he there reviews the history of Physics during the last hundred years and shows that during that time it has approached ever nearer and nearer to a spiritual conception of the Universe. He concludes the review with these significant words: "Is it at all likely in the light of that history that we can long maintain air-tight compartments separating ether (or matter, which ever you will) from life or mind?" Is that not but the scientist's way of wording the religionist's thought "In him we live and move and have our being?" The former delves into Nature's phenomena and becomes convinced of its essentially spiritual character. The latter starts out by contemplating Spirit and is awed and inspired by the marvels of its manifold material manifestations.

From both Science and Religion we derive knowledge only by means of a definite effort on our part. A way by which we may receive it unconsciously in the form of pleasure is through Art. A little book published in London in 1715* has, in its quaint language and unusual spelling, this to say on that subject: "Because Pictures are universally delightful, and accordingly made one part of our Ornamental Furniture, many, I believe, confider the Art of Painting as but a Pleafing Superfluity; at beft, that it holds but a low rank with refpect to its Ufefulnefs to Mankind.

"If there were in reality no more in it than an innocent Amufement; if it were only one of thofe Sweets that the Divine Providence has beftowed on us, to render the Good of our Prefent Being fuperior to the Evil of it; or whether it be or no, to render Life fomewhat more eligible, it

*—The Theory of Painting by "Mr. Richardson."

ought to be confider'd as a Bounty from Heaven, and to hold a place in our Efteem accordingly. Pleafure, however it be depreciated, is what we all eagerly and inceffantly purfue; and when Innocent, and confequently a Divine Benefaction, is to be confider'd in that View, and as an Ingredient in Human Life, which the Supreme Wisdom has judg'd neceffary."

But Art does more than impart pleasure; it often brings us vital aspects of truth. It does this by uplifting thought. Its highest forms are invariably found where the highest thoughts are expressed. In any of its forms it tells the story of human aspiration as well as of human experience, by means of symbols. To understand it aright is to apprehend the thought impulse back of the symbol. This is its essential quality. This is true not only of architecture but of all branches of art. Literature for example, is not only a mechanical arrangement of words combined in various ways to produce pleasant results; it is a record of human life and also one of aspiration expressed through word symbols. Music is not merely a display of technique; it is thought and aspiration expressed in the pleasing terms of melody. Art in painting is not only the clever handling of pigments; it is also the interpretation of nature's higher aspects, or of the better phases of human character, by means of symmetrical form, harmonious color, and arrangement of light. Henry Van Dyke has said that without the aim to cheer, console, purify or enoble, literature has "never sent an arrow close to the mark." To mention such oratorios as "The Messiah", "St. Paul," and "Elijah" to any well informed music lover is to suggest to him compositions of an uplifting nature. The art of painting would be without its most valuable assets were it unaccompanied by the world's great religious and hence moral subjects.

From what has been said it may be surmised that I feel that all these aspects of truth emanate in the last analysis from one central Source. Who can doubt that behind all visible things is a great spiritual Urge thus finding expression. In nature It pushes out through the trees, comes forth in their delicate leaf buds in the Spring, and manifests in myriad varieties of beautiful flowers. In man it is exemplified in the way that different individuals are equipped with different talents and temperaments and through different occupations carry out It's manifold purposes. Back of works of architecture, sculpture, painting, etc., which we admire in the realm of art must be this same divine Impulse. One with that Power which scientists tells us is today transforming energy into matter, It must also be That which religionists in their churches and elsewhere worship and call God. Many men I am sure feel this to be the case, and that such a Power has worked and does work through them. With no pretensions to being extraordinarily endowed I nevertheless have frequently felt impelled in this way in my work. Biography is full of accounts of men who, not only in art, but in all walks of life, have felt likewise, and some have gone without food and sleep at times, impelled by such an inward Urge demanding expression. Thus does the Mind which indwells the Universe express Itself through us. Thus may each man's work become a part of his religion.

THE EL CAPISTRANO APARTMENT HOUSE, SAN FRANCISCO

by
WILLIAM HAMILTON

THE number of apartment houses erected in San Francisco since the depression may be counted on the fingers with some fingers left after the count. While there have been quite a few small structures erected, together with some modernizations, the number of new apartments of the more pretentious type, have been astonishingly few. There is one structure, however, that may be classed as pretentious and which took courage and confidence on the part of its owner to build. Just when business conditions looked the blackest, Floyd W. Hanchett, a retired San Francisco business man, with every confidence in the ultimate outcome of his investment, commissioned Wm. Clement Ambrose to prepare plans for an eight-story building at 25th and Bartlett Streets, San Francisco. Soon after a contract was let to G. P. W. Jensen to erect the building and in April, 1933, the structure was completed and named the El Capistrano Apartments. Since the day of its completion it has been 100 per cent occupied. Not bad judgment on the part of a—shall we say—shrewd investor!

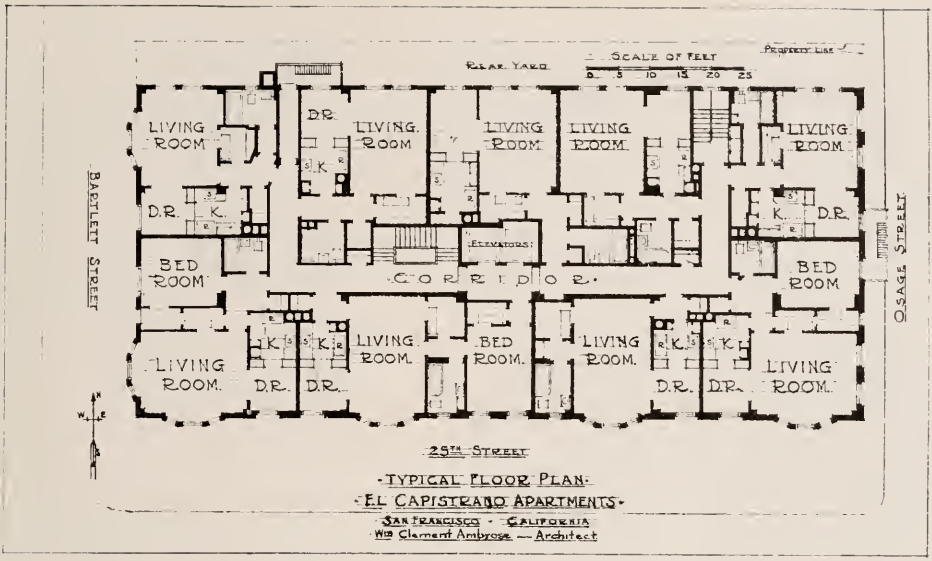
TYPICAL LIVING ROOM IN EL CAPISTRANO APARTMENT HOUSE, SAN FRANCISCO
Wm. C. Ambrose, Architect

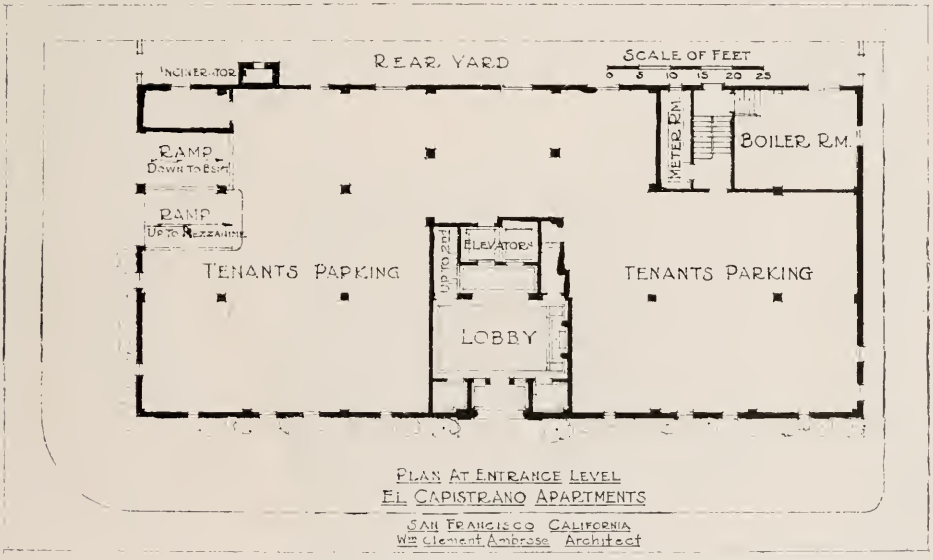
The site is unquestionably one of the best in the city and besides being centrally located, it has the added advantage of two street and an alley frontage. The lot is 61'-1"x117'-6". With a pleasing exterior treatment of buff colored reinforced brick, the building is not only one of the newest, but one of the best designed apartment structures in the San Francisco Bay area. The two street facades reflect the modern school modestly accentu-

EL CAPISTRANO APARTMENT HOUSE, SAN FRANCISCO
WM. CLEMENT AMBROSE, ARCHITECT

ENTRANCE DETAIL, EL CAPISTRANO APARTMENT HOUSE
WM. CLEMENT AMBROSE, ARCHITECT

LOBBY, EL CAPISTRANO APARTMENT HOUSE SAN FRANCISCO
WM. CLEMENT AMBROSE, ARCHITECT





PLANS, EL CAPISTRANO APARTMENT HOUSE, SAN FRANCISCO
WM. CLEMENT AMBROSE, ARCHITECT

ated, while the interior design is a nicely restrained Italian.

Possessing a complete steel frame, the building is designed to resist a lateral force equal to 4 per cent of the dead weight of the structure. This is in compliance with the new State Law safeguarding structures of this type from damage by earthquake. Quake insurance on the building consequently is nil.

Junior floor beams with 2½ inch concrete floor slabs are used in the apartment section while 4 inch concrete floor slabs are used for the garage. The garage problem, by the way, has been nicely solved without encroaching upon the rather stiff building laws of the municipality, and without cutting into valuable rentable space. From the street you drive down a ramp to the basement and from the basement you drive up a ramp to the mezzanine floor. The garage space is thus entirely taken care of on these two floors; some 45 cars are accommodated.

All interior partitions of the 54 apartments and 126 rooms are of metal lath and plaster on wood studs, exceptionally well insulated with Cabot's quilt suspended between double studding.

El Capistrano Apartments represent an expenditure of approximately $160,000, including ranges, fixtures, refrigeration and architect's fee.

CONSTRUCTION DATA

El Capistrano Apartments
San Francisco

Wm. Clement Ambrose, Architect.
Harold Hammill, Structural Engineer
G. P. W. Jensen, Builder.

Number of stories—Eight.
Frame—Structural steel by Judson Pacific Co.
Floors—Concrete.
Partitions—Metal lath and plaster.
Exterior wall—Reinforced buff mottled brick by N. Clark & Son.
Exterior trim—Re-cut cast stone.
Heating—Hot water system using Mueller copper tubing; also vacuum system with radiators.
Ventilating—Forced exhaust in each apartment, kitchen and bath.
Refrigeration—Frigidaires.
Fuel—Each apartment serviced with gas and electric power, giving tenants choice of fuel.
Elevators—Two Otis passenger.
Cost of building—34.3c per cubic foot.

FREE SKETCHES – "WHAT FOOLS THESE MORTALS BE"

The following communication in Pencil Points from an anonymous Los Angeles architect, describes the "free sketch evil" with which many of our readers are undoubtedly familiar.

MUCH has been written about architectural practice — how to draw plans, write specifications, conduct an office and all the legal and business work, but I have seen nothing yet written on the subject of what to do if a "speculator - builder" walks into your office and wants free sketches.

Surely many architects have been inflicted with them. You old ones know the game; for the younger, and some not so young, here is a *way* or a policy I would recommend. It is born of experience and that is a great teacher.

First let me state that the volume of work done in the large cities, especially in this growing city of Los Angeles, by this class of operators is, or was, enormous. In the field of apartment houses and hotels it was at least nine-tenths of all the work, and in private residences it is still large, say three-quarters. So the problem is not to be brushed aside as unimportant.

Next let me define what I mean by a "speculator-builder." In this class will be included promoters, real estate companies and agents who build to sell, finance and building companies who induce owners to allow them to gamble with their property, and contractors who build to sell (that is, buying the lot on terms, obtaining a loan and perhaps putting some of his own money into the deal, which has been known to happen in rare instances and in which case he expects to make one hundred to two hundred per cent profit). In any case his methods and manner of building are the same. The "speculator-builder" class has also been known to include certain loan brokers who know nothing of building, but who know all about the very important item of how to obtain favorable loans—by questionable methods, misrepresentation or exaggeration of the building or property values and of obtainable rentals.

I would include in this class anybody who walks into an architect's office and expects him to make sketches or do other work on a promise that if the job goes through he will somehow be paid for it. If, for any reason, the job never reaches a point where any money is obtained from the loan then the architect is just "out o' luck."

Now, it ought to go without saying that the architect who takes these chances is a plain "damfool" but there are plenty of us. Have you listened to the siren song of the promoter, the rosy promises, the sure-thing arguments? These fellows are good at it. If you do not think so, consider the volume of work that is done that way.

We all know that the situation is bad enough, but what to do? In these days of few jobs, any kind of project is to be looked upon with hopeful expectancy. We do not say at once "nothing doing" even if we are busy with other profitable work. We

consider, and if we have nothing else to do we take a chance. Here is what I have determined to do in these cases. Any promoter must pay a fee before any sketches are delivered. A fee in proportion to the size of the job with a minimum of $50. A promoter without $50 to advance is "no good" and if he asks you to wait and get it out of the loan he is offering you a hundred to one chance which pays you about one to a hundred—and then, you are not told *all* the conditions.

This is gleaned from the light of my experience and I will cite a few instances. First let me say to all and sundry promoters in the words of the song, "If you ain't got no money you needn't come around." Or, in other words, if your financial resources or willingness to pay are inadequate, negotiations will be ineffectual and barren of results.

And let me say to all architects, draftsmen, and just plain "designers" that unless you adopt the same policy you will be working for nothing. Of course it is your privilege to take a long chance—but, believe me, it *is* a long one.

Now listen to some actual experiences.

Only a few years ago a promoter we will call A signed a contract with our firm to prepare plans and specifications for an apartment house in Hollywood to cost approximately $200,000. Our payments were to come out of the loan, with the proviso that if, for any reason, the job did not go ahead, we were to be reimbursed for actual cash outlay for draftsmen and other expenses. This job did go ahead but when the plans were all made and sub-estimates in, there arose some doubt about its continuing, and for this reason:

The "joint control" is a function of the Bonding Company and a "lien and completion bond" is required by the loan company, to insure that all the money goes to pay for the building and is not diverted elsewhere. To insure the completion of the building, they also demand to know that there is enough money available. If the estimates run too high they would come out "short" so they include in their estimate or "set-up" what they call a "cushion" or contingency fund, which they arbitrarily set, in this case, at $11,000. This made the available funds about $10,000 short, so, to make this up, A came to the architects, among others who were furnishing work or materials, and got us to accept his notes for half our fee and give a waiver for that amount to the joint control, so as to bring the total cost within the required amount. A assured us that the "cushion" would take care of the notes at the end of the job. This was after the plans were all made, passed in the Building Department, estimates all in, and job ready to start—and it was represented to us that, unless we did this, the job would never start. So we fell for the rosy representations along with a lot of the sub-contractors.

Upon excavating the site, the Building Department required the footings to be enlarged at an additional cost of $2,500 and additional marble work was added amounting to $1,200. There were also some offsets or credits for work omitted which we estimated at $3,000. Imagine our chagrin when we were informed at the end of the job that there was nothing left in the "cushion." The grafters who were supposed to protect the subcontractors and see that they got their money had "swiped" it, or at least it was never accounted for. They "sat pretty" hard on the "cushion."

Of course there were liens and law suits, but no money. We obtained a judgement against A for three thousand dollars and were able to attach some stock he held in the corporation in whose name the building was built, and we considered ourselves fortunate to sell it for $550. Where we made a fatal mistake was to take A's notes to

our bank, as collateral, and obtain cash with which to pay our draftsmen, rent, and other expenses. When the notes came due, we were required, both my partner and I, to give the bank mortgages on our houses for $1,800 each. These are still there, whereas if we had never seen Mr. A we would have our homes free and clear, as before.

So, believe it or not, all I have to show for that job is some photographs of the building hanging in the office and the mortgage hanging over my home.

Now take the case of B and C who were two Jews, proprietors of a stall in a big market where they sold ham and bacon. They were induced by a slick real estate broker, who made a specialty of 99-year leases, to take a lease on a very desirable corner in Hollywood. This agent had inveigled the lot owners to sign a ground lease for 99 years, which provided among other things for the "use of the fee." That is, the title or "fee simple" was to pass to the lessees, B and C, while the mortgages were recorded against it, after which the title was to be returned to the owners. This was done in escrow so as to insure its return. It also insured the owners against any deficiency judgment in case of foreclosure, and in this case it also "insured" the owners from all control or income from the property. Can you imagine an owner falling for it? Yet I know of three who did that, in one neighborhood in one year.

Here is what happened. After we had signed a contract similar to A's, we went ahead and prepared the sketches. In this case there was a general contractor who made up the difference in cost of the building and the money available from the loan by taking a second trust deed amounting to $30,000. This included a "pick-up" on the lot (that is, an existing mortgage). This building cost $250,000 and the first loan was for $236,000.

Negotiations went along until it was time to provide for the furniture, and the loan company took care of that before it would proceed. So B and C were called upon to put up the cash for that, about $50,000. They were quite unable to do so and were frozen out. The broker handling the project was really in control and he produced a hotel man who put up a bond to supply the furniture when the building was ready and took an operating lease from B and C. All these negotiations were made on the basis of some $\frac{1}{8}$"-scale sketches. When the papers were finally signed up we proceeded with the working drawings, whereon we demanded some payment and they paid us about $2,000—not quite sufficient to pay for the cost of the plans. We took their note, secured by the ground lease, for the balance, on which they made payments of $75 per week while we were working on the plans, and then quit. We sued and got judgment. B assigned all of his interest to C and went through bankruptcy. C assigned the lease over to us but it has never been worth a cent, because after the building was completed, there was a difficulty due to shortage of money attributed to the "pickup" and to the fact that the broker had "milked" the deal copiously.

The creditors got together and agreed that the loan company should act as trustee and collect the rent from the hotel man who was to run the place and pay 60% of the net proceeds to the trustee, and that this money should be applied; first, to the payment of taxes and insurance; second, interest and amortization of the first mortgage; third, subcontractors' claims paid off; fourth, payments on the second mortgage, principal and interest; fifth, the ground rent on the 99-year lease; and lastly, any payment on the said lease from the rents by

the operator, who was entitled to keep 40% of the rentals for his expense and profit.

The operator's monthly reports were sent to us for some time, until the loan company went out of business, but they never showed that the third item, or the claims of the subcontractors were ever paid a cent or that the second mortgagee or the owners of the land ever got a cent. All of which is due to the fact that the hotel man turned in about one-third of what was figured he should turn in. We have a judgment against C but since then he has gone through bankruptcy, so all we have for that job is some paid bills for money spent in producing the plans, a worthless lease, and some photos hanging in the office; and, oh, yes, the experience, that is worth a lot.

Another example we will call Mr. D, a promoter who came well introduced and represented to us that he had a hotel job all but put over. All he needed was some floor plans, which would show how many rooms he could get and the sizes of the stores on the first floor. This we made for him. After some time he came back and wanted a perspective to show the loan company. I demanded a fee of $50 before I would do any more. He refused, either through unwillingness or inability to pay, and went away.

Some weeks after we saw in the papers that the job was going ahead with another architect, so we said to ourselves, with a metaphorical kick in the shins, "Well, that is a job lost through standing out for an advance fee." But that is not the end of the story. Some weeks later we saw notices of liens, and then a foreclosure of the mortgage, and we heard that the architect got "stuck plenty."

Then there was another one, Mr. E, a "hot air merchant" as I sized him up. He had me go with him down to Dana Point, about 50 miles from Los Angeles to look over a hotel site; about a $100,000 job. I spent the day with him; we had lunch at the expense of the real estate company and at the end of the day I asked for an advance fee of $250. He would pay nothing, so we parted. He gave the job to another architect whom I knew and who afterward told me he made the plans, sued for his fee, got judgment, but could find nothing to attach—absolutely nothing.

Then there was the case of the F Corporation. My contract provided that in case the job did not proceed, for any reason, I was to receive a fee of one per cent, for which I was to do a limited amount of work. This I did, and after some waiting, during which the job did not proceed, I sued, after trying to make a collection, and got a judgment but that is all. The responsible men in the corporation got out, the irresponsible one was thrown out, leaving nothing. My attorney has had the president and agent upon supplementary proceedings and can find nothing to attach. The drawings are still held as an exhibit by the court and all I have to show is a bill from my attorney (unpaid).

I have just looked over my book where I keep a list of the jobs done in the last ten years. In every job that we did for speculator-builders or promoters, we got "stung" in one way or another; or, if we did get paid, it was such a mean, stingy fee as to be unprofitable. Fortunately I have done other work in the last ten years than the class I have been telling you about or I would have starved to death.

So it all comes back to an old adage that my father tried to impress on me when I was young; "Experience is a hard school but fools will learn in no other."

TERMITES AND TERMITE CONTROL

by
A. A. BROWN
Consulting Engineer

Wood-boring insects are said to cause $45,000,000 worth of damage annually to forest products, a large percentage of which is preventable. As long ago as 1930, the Department of Commerce in a report on "Treated Lumber and Its Uses and Economies," said: "Architects, engineers and builders interested in furthering good construction practices will find that the use of preserved wood represents an appreciable economy." The same report stated: "Coal-tar creasote is the most effective and generally useful wood preservative." Similar conclusions have been reached by the Termite Investigations Committee, San Francisco, as a result of five years of intensive work and the expenditure of $60,000.00 in studying the habits of termites and seeking effective means of their control. The final report of the Committee is presented in a 768-page book, "Termites and Termite Control," from the University of California Press, Berkeley, California—Charles Kofoid, Editor-in-Chief. This article highlights those portions of the book dealing with resistivity of woods and protective treatments.

RECENTLY I was told by one who had lived for more than thirty years in Egypt that at certain times of the year the flying ants were very troublesome. The infestation became annoying in 1919 and since that date has been much in evidence at certain seasons. Termites are commonly mistaken for flying ants.

It is not definitely know how long ago termites first put in an appearance in buildings on the Pacific Coast. It was not until the growth of cities and towns became active about twenty years ago that the presence of termites in buildings attracted attention. From records available it is indicated that cognizance of termite damage was taken in southern California in 1915. In 1918 two buildings in Pasadena were repaired due to damage by subterranean termites. On the Pacific Coast, official notice of termite damage in buildings was taken by the Building Department of the City of Pasadena in 1926. In that year termite infestation was noted, during alterations, in a garage building having brick walls, wood posts and roof trusses, and a concrete floor. Investigation showed that subterranean termites had gone fourteen feet up the brick wall, then through the lime mortar, and had attacked the wood posts.

The roof timbers of the San Miguel Mission, after 136 years of service, were found in 1931 to be attacked by the dry-wood termite. Mission San Juan Capistrano, founded in 1776 and rebuilt in 1812 following an earthquake, was found in 1926 to be damaged by this termite; likewise, the old Customs House at Monterey, California, built in 1814, was found in 1929 to have been attacked by the same termite.

The available records would indicate

EDITOR'S NOTE—This is the second of three articles prepared for readers of THE ARCHITECT AND ENGINEER by Mr. Brown who is chairman of the Termite Investigations Committee, San Francisco.

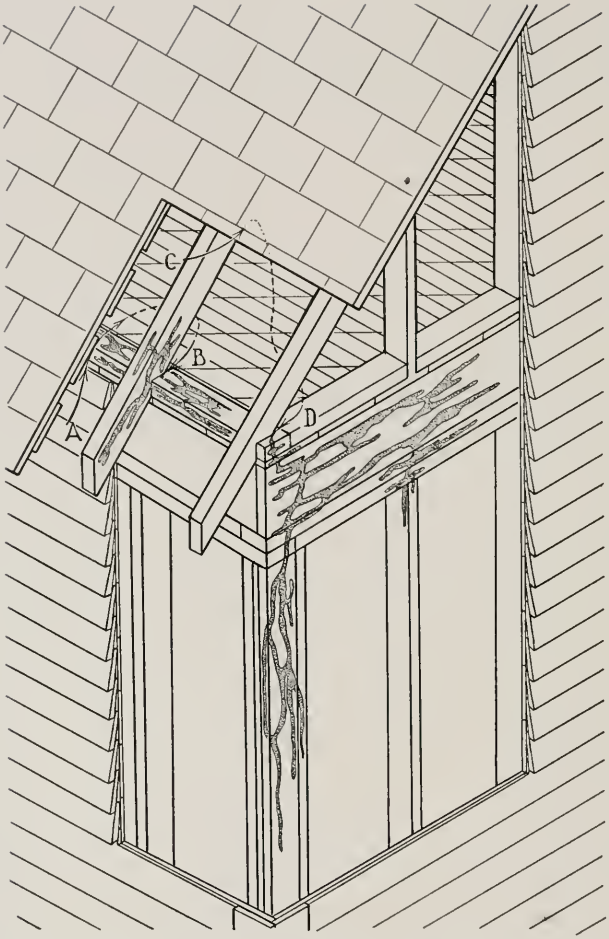


Fig. 10—Diagrammatic sketch showing workings of two colonies of the common dry-wood termite, Kalotermes minor, based on numerous observations of colonies in houses. The lines AB and CD mark the assumed original routes of entry of the two colonizing pairs. The galleries of the two colonies are not connected with each other.

that the geometric accumulation of termites and their destructive activities in man-made structures did not receive serious attention in California prior to the present decade. With an unlimited food supply conveniently supplied by man and virtually no recognized control measures yet generally adopted, together with the widespread colonization of these insects, it is inevitable that the next few years will witness an increasing amount of destruction of wood and its products in existing structures by termites. With the general recognition of the termite hazard, we can confidently expect the development of improved construction measures, as well as the adoption of preventative measures in new work.

Beware of Panaceas

Many panaceas for the elimination and prevention of termite damage are being offered to the public. The possibility of quick easy money induced large numbers to enter the field as termite control operators. Our Termite Investigations Committee has found some of these operators to be thoroughly competent and rendering a high quality of service to their clients, while others were opportunists guided largely by the profit motive. The report of the Committee contains much data relating to methods of eradication in general use by termite operators, such as treatments with poisonous dusts and by fumigation and ground treatments. In a neighborhood city a termite operator asked permission of a property owner to inspect the property for termites. After inspection he reported that the house was in danger of collapse and was commissioned to do the necessary work to correct the weakness that might cause collapse. Upon completion the owner received a bill for $150.00. Not a single piece of underpinning was renewed. The work done consisted in the main of dusting the ground and woodwork below the first floor with an arsenical compound.

The use of arsenicals as a means of preventing and controlling termite damage is not approved by the Termite Investigations Committee. It recommends that arsenical preservatives be not used in the treatment of wood, wall-board, building paper, or other material used in dwellings or structures accessible to man, or in or on soil underneath such structures. Arsenic compounds thus used are highly toxic to man and in case of fire present a toxic fume hazard. Furthermore, some species of fungi turn arsenical compounds into a volatile form which diffuses through the air and slowly poisons persons breathing it.

The observer of termite behavoir and the inspector of termite damage both find evidences of selection of particular species of wood where several are available, and of attack within the species confined to particular pieces among many in comparable exposures. Figure 14 shows a portion of a furniture store on the second floor of a two-story brick building erected in 1888 which illustrates the preference of termites for particular pieces of wood.

Penetrate Redwood Floor

The floor was covered by a thick wool carpet with a heavy felt mat beneath it. The floor was of Douglas fir resting on a redwood underfloor, and this in turn on Douglas fir joists. Termite pellets were first noticed underneath an antique birch cabinet. Each time the cabinet was moved to sweep the carpet, there would be a new pile of pellets, and upon close examination holes were seen through the wool carpet and small holes penetrating the 1″x4″ Douglas fir flooring. Upon removing the carpet and 1″x4″ finish flooring, holes were observed penetrating the redwood subfloor. Upon removing the subfloor, there were holes

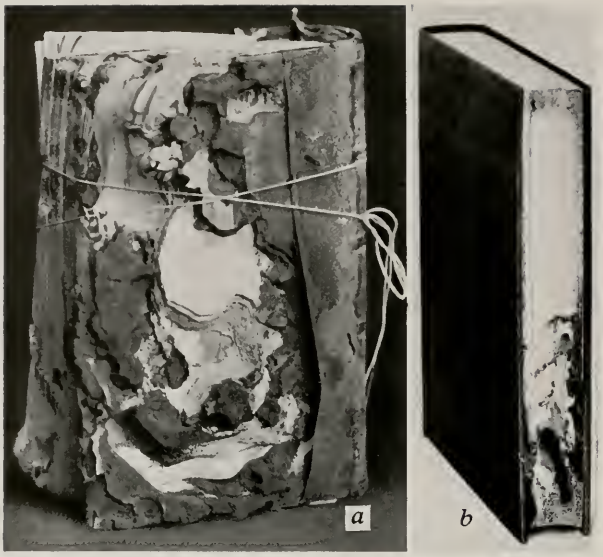


Fig. 11—Books from the shelves of a Los Angeles bookstore destroyed by the ground dwelling termites. The lack of intellectual progress in the tropics has been correlated by some writers with the rapid destruction by termites of printed or written records.

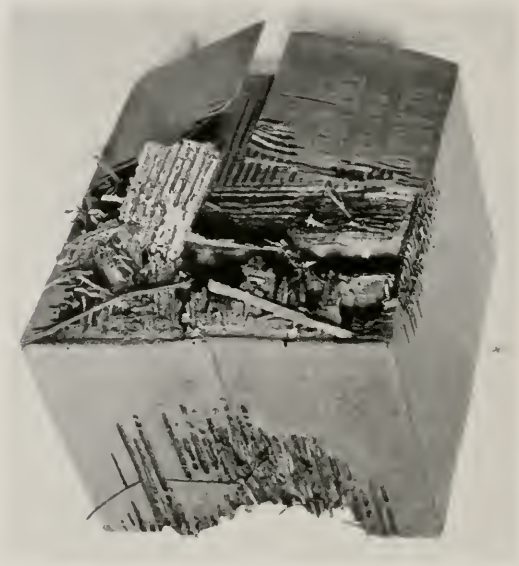


Fig. 12—Corrugated pasteboard box ruined by subterranean termites while in storage.

penetrating the Douglas fir floor joists. A section of the floor was removed at either side of the outside door. The termites had attacked 9 of the 2" scabs on either side of the floor joists for their full length of 8 feet. Also, two of the main floor joists had been attacked for about 23 feet. Only two sections of the 1"x4" Douglas fir flooring had been attacked. The redwood door jambs around and over the top of the outside door had been penetrated, with one or two holes clear around the casing, and the first 2 inches next to the floor of one side of the door jamb had been damaged to about 25 per cent.

Two of the front legs of the antique chest were resting directly over the two pieces of infested flooring. Each leg had a single hole penetrating into the bottom. One leg seemed to be more infested than the other and was removed from the chest, creosote poured into the hole, and in a few minutes was turned right side up and tapped, with the result that approximately 500 termites came from within the leg. The selection of the two boards only out of the many available in the Douglas fir flooring and the selection of two joists only and of nine consecutive scabs, with the omission of the joists between them, the mere traversing of the redwood underfloor, and the final leaving of the Douglas fir flooring to enter the birch antique chest, is a unique illustration of the preference of the termites for particular pieces of wood.

In the wood preference tests conducted by the Committee the five woods so tested, namely, Port Orford cedar, cypress, redwood, Douglas fir, and Western red cedar, are arranged in series going from Port Orford cedar, least preferred, to Western red cedar, most preferred, in the order given above.

A single Douglas fir unseasoned and fragrant 2"x8" timber lying among others on top of a load of similar pieces at a building site in a southern California village at the height of the swarming season of the Kalotermes minor (dry-wood termite), had no less than 14 pairs of reproductives dug in and sealed in within twelve hours, whereas other pieces alongside this one had at the most only 2 pairs (Fig. 16). The factors which determine these selections are complex. They differ for different species of termites, for different stages of the life cycle, and for the different environments.

Some of the factors certainly involved, and others probably involved, in selection are the moisture content of the wood, both free and bound; the amounts and chemical nature of the various extractives; the physical qualities of the wood resulting in density, hardness, or other properties influencing its resistance to the jaws of the termite; the rates of growth of the wood in the spring and the summer zones of the annual rings; the differences between sapwood and heartwood; the nature and amounts of the nutrient substances which favor the growth of fungi in the wood, especially in the walls of the burrows; and the nature and extent of pre-existing fungus attack. Temperature exercises a controlling effect on many termite activities. Thus in Honolulu it is reported that the superheated attics of wooden houses are especially liable to intense destructive activity by Coptotermes. In California the earthen tunnels and towers of the ground dwelling termites are best developed in warm basements, near furnaces, steam pipes, on the sunny side of fences, and other places where sustained warmth prevails.

Field Tests Have Problems

Termite resistivity of wood can be regarded as the component of all these factors and probably many others. One of the

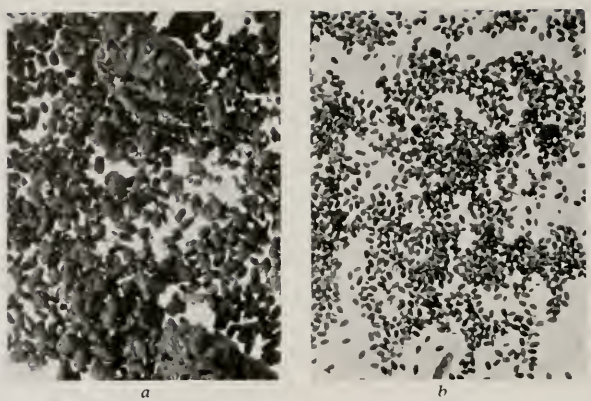


Fig. 13—Fecal pellets are always present in the workings of the wood-dwelling termites. The pellets of the damp-wood termites (a) are much larger than the more regularly formed ones of the dry-wood termites (b). Both illustrations are magnified to twice natural size.

main reasons for variability in field tests lies in the fact that both in nature and practice the recorded or observed resistivity of a given piece of wood to termite attack is determined, at least in part, by the choices available to the termite at the time and place. A given piece of wood under one set of conditions as to adjacent wood available remains untouched, but is attacked under other conditions of surrounding wood in the same place. All field tests of necessity involve the preferential factor, since test timbers must be exposed in locations where termites are already present and have available natural food. The natural environments have many variable factors. As a result of these variations, a given test timber may not be attacked at one time or location but will be in another one seemingly similar.

Natural woods and some chemically treated woods which remain undamaged for several years in localities where susceptible woods fail, but which are attacked after some years of service or soon destroyed in other localities, are not to be rated as termite-resistant, but only as termite-deterrent. Obviously, this deterrent capacity will range over a wide amplitude of efficacy from a slight and very uncertain protective value to an approach to complete resistance. Some durable woods belong in the deterrent category. Some chemical treatments, such as that by zinc chloride, have only a silght deterrent action for termites. Some forms of treatment, such as brushing on creosote, have only a slight deterrent effect, and for a short time, while dipping and boiling increase and prolong the protective effect but do not arrive at the more complete termite resistivity possible with the pressure treatment. In laboratory tests surfaces of wood brush-treated with toxic chemicals or untreated sap-wood covered with toxic paper of heavy weight, exposed to continuous attack of confined

termites, reveal the capacity of even so small a number of termites as fifteen to penetrate a relatively thin protective layer of treated wood or of poisoned paper before all of them are killed.

sentially similar to this may occasionally occur in nature, but termites can generally elude such limitations.

Eight commercial species of wood were tested by the Committee using the second

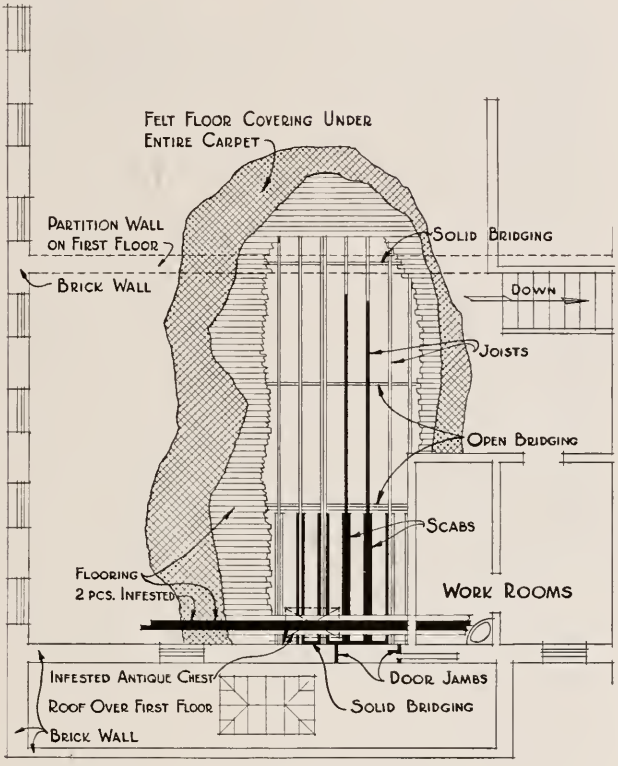


Fig. 14—Plan of building attacked by the dry-wood termite, showing in solid black the location and extent of infestation.

The second type of test is that involving non-preferential or forced feeding under scientific control, in which the termites are placed in the wood or other material to be tested and are retained there until the effects of the particular diet upon their destructive activity and the duration of life are apparent. Conditions in field tests es-

type of test. No species of wood tested proved termite-resistant. The tests showed that the capacity of wood to retard termite attack was in general the greatest in those blocks having a high percentage of hot-water extractive, and the lowest in those blocks containing the low percentages. The amount of extractive in any species

which results in its durability is not the same for all species. The hot-water soluble extractive in redwood has been found to range from 5.45 to 28.23 per cent of the dry weight of the wood. These tests suggest the advisability, when purchasing naturally resistant wood, of requiring, as

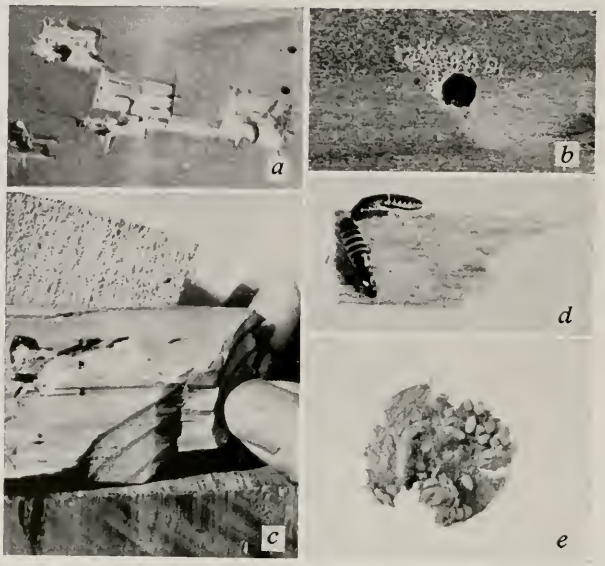


Fig. 15—Photographs of a pair of primary reproductives of Kalotermes minor (dry-wood termite) and the work of newly established pairs. (a) Three recently excavated royal cells cut open, the two lower showing outlines of the cells. At right are two (dark) entrance holes, about one-half natural size. (b) An entrance hole not yet sealed, three times natural size. (c) Excavations made by a young colony about 15 months old, consisting of the royal pair and three young nymphs, natural size. (d) Royal pair from a young active colony, twice natural size.. The enlargement of the queen's abdomen is noticeable. (e) Seal made over the mouth of a 5 16-inch vial, three times natural size.

is the practice in the case of treated woods, that it meet definite specifications involving laboratory tests of samples, which will insure that it contains the proper percentage of effective extractives.

Some woods, such as Port Orford cedar, contain a considerable part of the extractive in the form of volatile oils which afford the principal source of the resistance of these woods to termites. In nature termites will attack such wood from which this oil has been evaporated by weathering. The removal of the oil in laboratory experiments by continuous heating also renders the wood susceptible to attack. The valatile oil may be thus decreased to a point at which it does not offer any further termite deterrence. The natural preservatives in wood are water soluble, and field observations suggest that prolonged weathering makes for susceptibility to termite attack.

Termites Attack Stadium

When the Stanford University Stadium was constructed in 1921 redwood mudsills were used for the support of the seat boards. These mudsills were later de-

Fig. 16—Kalotermes minor (dry-wood termite). Photographs of emergence holes, alates ready to fly, and dealates during pairing and infestation. (d)-(f) Somewhat reduced, others about natural size. (a) Surface of an infested pole, showing two sealed exit holes. (b)-(c) Groups of alates ready for flight. (d) Newly mated pair, male following female in search of entrance location. (e) Reunion of recently mated king and queen, after their separation while in search of an entrance. (f) Both members of a pair at work on the excavation. (g) Small piece of board showing a pair whose excavation is so deep as to hide all but the tip of the excavating individual. Excavated wood is piled near the aperture.

Fig. 17—Red cedar power line pole, 16 years in service damaged by dry-wood termites. This was a 30-foot pole, the butt of which, 4 feet long, was removed before the body of the pole was cut into 13-2-foot lengths. There was 1 eight-year-old colony and 1 four-year-old colony in the first 10—2-foot lengths. The population of the colonies consisted of 1 eight-year-old queen, 1 four-year-old queen, 1 secondary queen, 67 soldiers, and 2,197 nymphs—a total of 2267 termites. (a) The top of the pole split open. (b) Lower part of pole. Note that the pole was nearly severed at the ground line.

Fig. 18—Further examples of damage to pole shown in Fig. 17. (a) cross-sections of the crossarm with one pin in place. (b) Top of pole partly dissected. (c) Two of the four infested pins.

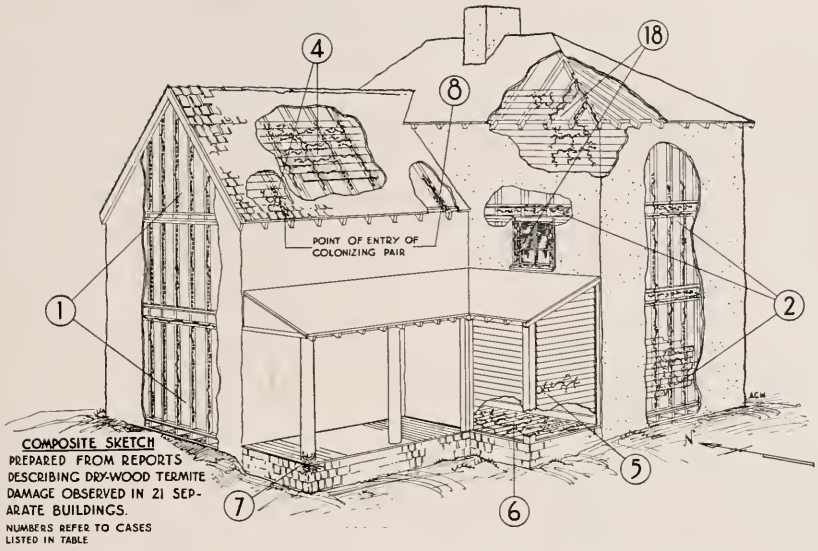


Fig. 19—Illustrating points of attack in buildings by the dry-wood termites.

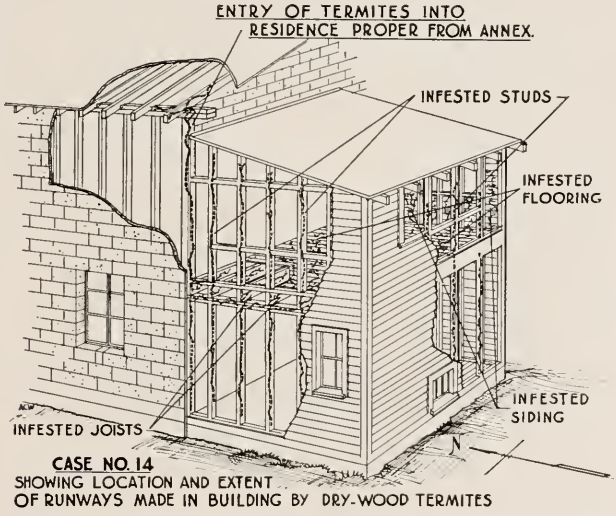

ENTRY OF TERMITES INTO RESIDENCE PROPER FROM ANNEX.
INFESTED STUDS
INFESTED FLOORING
INFESTED SIDING
INFESTED JOISTS
N
CASE NO. 14
SHOWING LOCATION AND EXTENT OF RUNWAYS MADE IN BUILDING BY DRY-WOOD TERMITES

Fig. 20—Illustrating damage by dry-wood termites to residence in Santa Paula, California.

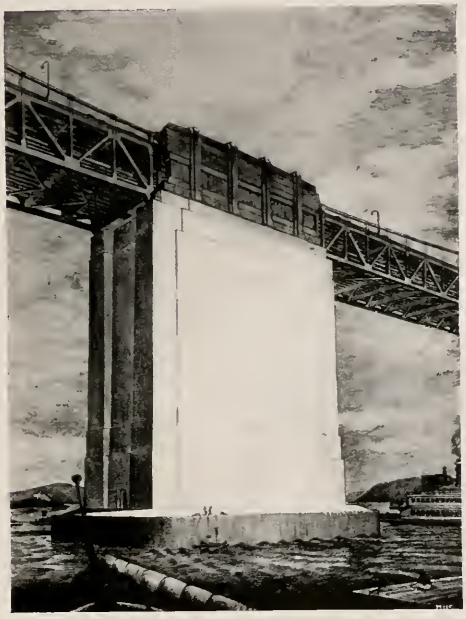
stroyed by termite attack, necessitating the reconstruction of the entire stadium seating arrangement. The use of termite deterrent woods at or near the ground line in structures where the use life is more than temporary should be avoided. Results of the Committee's experiments indicate that heartwood containing high concentrations of natural preservatives is less palatable to termites, in general, than wood of the same species which contains low or medium quantities of such preservatives.

Tests were made to determine the toxic value of wood preservatives in various concentrations and amounts. Service records show that wood treated with toxic chemicals other than coal-tar creosote have proved satisfactory for the length of time they have been used, but in few cases do such service records extend over a period equal to the life to be expected of ordinary structures. For the most complete protection against termite damage the Committee recommends the use of wood impregnated with coal-tar creosote by pressure treatment according to standard specifications. Wood so treated will give satisfactory and lasting results under severe conditions of exposure to termite attack.

During the life of the Termite Committee much progress has been made in improving the adaptability of coal-tar creosote as a preservative. The development by the Reilly Laboratories, Indianapolis, of the Reilly Transparent Penetrating Creosote removed many objections to crude creosote and is considered a distinct advance in the art of wood preservation. The preservative is a highly refined blended coal-tar creosote oil from which have been removed those substances which impart color and also those which impede penetration into the wood. The oil was developed to fill a need for coal-tar creosote free from the objectionable qualities of crude creosote oil, such as its color and the difficulty of color painting wood treated with it. The new oil overcomes these objections and makes pressure-treated wood available for all types of building purposes.

Next month Mr. Brown will discuss the general recommendations for the prevention of termite damage.

Engineering and Building Construction



CONCRETE CENTER ANCHORAGE between the twin suspension bridges of the West Bay crossing

FEATURING ARCHITECTURAL STUDIES OF DESIGNS FOR CONCRETE MASSES, SAN FRANCISCO BAY BRIDGE

ENTRANCE TO YERBA BUENA ISLAND TUNNEL AND CONCRETE ABUTMENTS AT WEST PORTAL

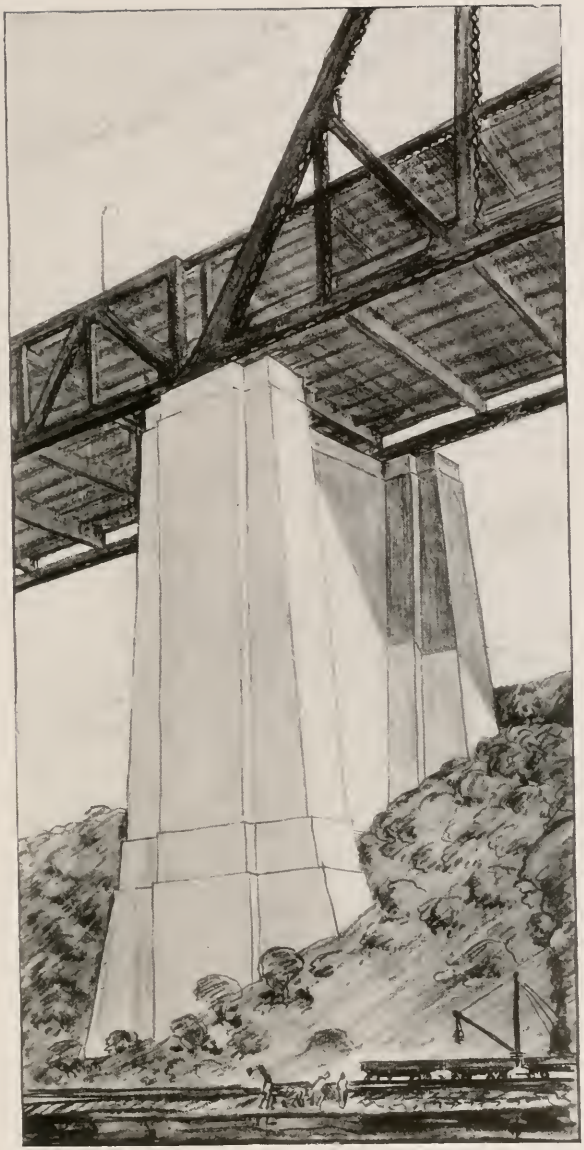
ARCHITECTURAL TREATMENT OF THE BAY BRIDGE

by
FREDERICK W. JONES

"NOT only that it will be the largest bridge in the world, but it must be the most beautiful."

This declaration of policy in the design of the San Francisco-Oakland Bay Bridge, first enunciated by Governor James Rolph, Jr., and reiterated by State Director of Public Works Earl Lee Kelly at a California Toll Bridge Authority meeting, at which a Board of Consulting Architects was created, has borne fruit.

After that conference, at which Chief Engineer C. H. Purcell was present, Director of Public Works Kelly, on authority from the Governor, appointed a Board of Consulting Architects for the bridge, consisting of Timothy L. Pflueger, Arthur Brown, Jr., and John J. Donovan.



PIER E1 ON ARMY POINT, EAST SIDE OF YERBA BUENA ISLAND. EXCAVATION FOR THIS PIER IS COMPLETE

All three architects are well and favorably known to the profession. Mr. Pflueger is an exponent of the modern, with his Four-Fifty Sutter Street, San Francisco Stock Exchange, and Telephone Building as outstanding examples.

Mr. Brown is an exponent of the classic, with the everlasting beauty of San Francisco City Hall and Coit Memorial Tower on Telegraph Hill, numbered among his recent works.

Between these two, with a mixture of both, stands John J. Donovan whose Oakland Auditorium and many California school structures, rounded out the Consulting Board with regard to architectural background.

On first taking office the architects met with Chief Engineer Purcell and were shown the essentials of bridge building.

Chief Engineer Purcell and his staff, building the first great suspension bridge in the West, as well as the greatest suspension bridge ever built, outlined the engineering necessities to the architects.

Frequent conferences were held at which the three architects submitted designs and discussed them with Chief Engineer Purcell, Bridge Engineer Chas. E. Andrew, and Engineer of Design Glenn B. Woodruff.

The first suggestion of the architects to be approved by the engineers and placed in the bridge was the increasing of the angles of the diagonal cross bracing between the legs of each tower of the suspension bridge. This, according to the architects, would increase the appearance of height and majesty of these structural steel edifices which rise to the height of a 45-story building above the bay surface.

Attractive Concrete Masses

The next architectural problem was that of the concrete masses—the San Francisco

BRIDGE CABLE ANCHORAGE ON RINCON HILL FROM THE EMBARCADERO LOOKING NORTH. This concrete gravity anchorage will contain 68,000 cubic yards and compares in size to the Sphynx in Egypt.

cable anchorage, the concrete center anchorage, midway between San Francisco and Yerba Buena Island, and the Yerba Buena Island cable anchorage and portal to the great double-deck vehicular tunnel piercing this hill that rises out of San Francisco Bay.

Many designs were contemplated and discarded before one was accepted.

The San Francisco cable anchorage and the land piers supporting the bridge for 900 feet between Rincon Hill and the Embarcadero, constituted a problem in architecture not easily solved, but the treatment of the mass at the anchorage — a 68,000 cubic yard concrete block into which two 28¾" cables are anchored—will make an imposing monument of simple lines arising out of the base of historic Rincon Hill, and the curving ramps, like tentacles, will give this bridge a majestic bigness which is in itself a form of beauty.

Unique Steel Treatment

The concrete center anchorage, midway between San Francisco and the Island,

[Please turn to Page 53]

VERTICAL LIFT TYPE BRIDGE FOR M STREET, SACRAMENTO

by
F. W. PANHORST
State Bridge Engineer

THE time is not far away when the narrow, dangerous and unsightly bridge over the Sacramento River at "M" Street, the westerly entrance to Sacramento, will be replaced by a new and modern structure. The budget of the California State Division of Highways for the present bi-ennium includes an item of $433,000 as the state's share for constructing a new bridge. Co-operating with the state, Sacramento county has allotted $100,000 of the county's share of the gas tax from the present fiscal year budget and $133,000 from the next fiscal year budget to be used in conjunction with the state funds for the new bridge.

The present bridge was built in 1910 by the Sacramento Northern Railway Company with financial co-operation from Yolo and Sacramento counties. The railway company secured at that time a 50-year franchise extending to 1960, which has 26 years to run. This bridge, not intended for the heavy highway traffic it now carries, but built primarily for railroad traffic and protected by a 50-year franchise, is to be replaced by a new bridge, built and operated by the state.

This situation necessitated numerous conferences of state and railroad officials in order to arrive at an agreement satisfactory to both. The position taken by the railroad company was one of co-operation and an agreement satisfactory to both parties has been executed.

It must be remembered that no possible arrangement of tracks and highway could be such as to be entirely satisfactory to both railway and state. Naturally, the railway company would prefer to have a clear crossing not hindered by highway traffic, and the state would prefer a bridge with no railway interference, but neither the railway crossing nor the highway traffic could be eliminated.

It was, of course, suggested that the highway traffic should be carried over the tracks clear of all rail interference. Such a solution was possible, but the cost would be far in excess of available funds and the property damage to "M" Street due to the long run-off, as well as many other valid reasons, made necessary the elimination of such an overhead structure.

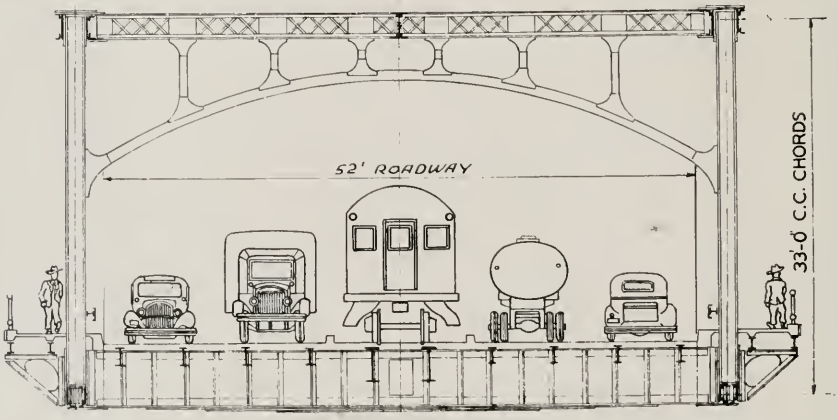
At a conference held December 22, attended by the railway company and state officials agreement was finally reached on the type of structure.

A combination railroad and highway bridge of the vertical type will be constructed. The accompanying sketch shows a typical cross section. The clear width between curbs will be 52 feet with the railway tracks in the center, vehicular traffic being protected by curbs which allow 13 feet for railway traffic. Two lanes of highway traffic in each direction will be provided with the outside lanes 10 feet in width and the interior lanes 9 feet and 6 inches. Four-foot sidewalks will be placed on each side of the bridge outside of the girders.

Original plans provided for utilizing the present piers but detailed studies have shown that a more economical and satisfactory structure can be secured by building entirely new piers at new locations.

A permit has been secured from the War Department for a clear opening between

PRELIMINARY ARCHITECT'S DRAWING OF LIFT TYPE BRIDGE, OVER SACRAMENTO RIVER AT M STREET, SACRAMENTO, CALIFORNIA



TYPICAL CROSS SECTION OF M STREET BRIDGE OVER SACRAMENTO RIVER, SACRAMENTO, CALIFORNIA

fenders, for river traffic, of 170 feet and a vertical clearance, with span lifted, of 100 feet above high water. The grade of the bridge will be practically the same as at present with a lift span of 209 feet 6 inches in length flanked by two steel spans 192 feet 6 inches and the other 165 feet in length.

The vertical lift type of structure was decided upon after considering all other possibilities.

A novel feature of the structure will be the use of light weight concrete for roadway slab and sidewalk. This concrete will weigh but 100 pounds per cubic foot while ordinary concrete weighs 150 pounds. The light weight concrete will give 3000 pounds per square inch compressive strength when 28 days old which is comparable to the heavier concrete now used. The lightness of weight is secured by using a special light weight aggregate.

The value, or economy, of using the light weight concrete is that it materially decreases the dead load on the bridge which in turn permits of smaller sized steel members.

As far as possible, the structure will be given suitable architectural treatment. The State Division of Architecture is co-operating to insure an aesthetic structure.

Special attention is being given to the entrance and exit to the bridge in order that a pleasing appearance will be secured. Attention is also being given to the approach across Front Street so that a smooth street grade will replace the existing rough journey over the various railway tracks.

During construction of the bridge vehicular traffic will be routed over the "I" Street bridge and rail traffic over a temporary bridge to be built just upstream from the existing "M" Street bridge.

ARCHITECTURAL TREATMENT OF THE BAY BRIDGE

[Concluded from Page 5]

with a plate steel section at its top along the side of the bridge roadway, will carry the bridge through and not break the twin suspension bridges into separate parts. It is believed by both the architects and the engineers that this steel treatment of the upper 30 feet of the concrete center anchorage will unify the suspension bridge crossing. A panorama of the West Bay crossing, with the steel-topped concrete center anchorage, will make the bridge appear to have three main spans rather than two main spans with two side spans in the center joined together by a concrete monument.

The steel top of the monument lessens its monumental appearance and subjects this unit to the sweep and cohesion of the two great cables with their naturally artistic lines.

The portal to the tunnel, visible from the upper deck of the bridge, carries out the general simplicity of the concrete face. No adornment is given to it other than three separate planes of broad arches over the crown of the tunnel portal and a raising of the portal by concrete blocks pyramided up to the necessary height.

Experienced Designer, Architect, Artist, looking for association in north

Wish to locate near Berkeley, San Francisco, etc. Desire to obtain position or association (with A. I. A. Architect preferably) in or near San Francisco. Cornell and U. of Penn. High class, all around practice for ten years in California. Residences particularly. (Appreciate interview).

Address Box 876
La Jolla, Calif.

GROUP PICTURE OF ENGINEERS AND OTHER INVITED GUESTS WHO VISITED THE PITTSBURG PLANT OF COLUMBIA STEEL COMPANY MARCH 6

ENGINEERS VISIT COLUMBIA STEEL PLANT AT PITTSBURG

ONE hundred and eighty technical and professional men, members of the Sacramento and the San Francisco sections of the American Society of Civil Engineers, and of the student Chapter of the College of Civil Engineering, University of California, and invited friends, were guests of the Columbia Steel Company at its Pittsburg, Contra Costa County plant, Tuesday, March 6. The visitors were transported to the plant by automobile, bus and train, arriving in Pittsburg at 9:30 A. M., where they were divided into groups and personally conducted through the various mills.

Company officials who acted as hosts to the party were William Cohn, General Superintendent, E. J. Schneider, Contracting Manager of the Bridge and Structural Department; and other members of the mechanical and sales departments of the company.

Notable guests included Dr. N. A. Bowers, President of the San Francisco section A.S.C.E.; Professors Charles G. Hyde, G. E. Troxell and H. E. Davis of the Engineering Department, University of California; H. C. Hunter, Division Erection Engineer, and C. W. Webb, Assistant Engineer American Bridge Company.

Luncheon was served at Hotel Los Medanos following which Mr. Cohn described in detail the operation of the plant from the melting of the charge of the furnaces to the final stages of production. The speaker vividly followed the process of manufacture as it had just been viewed by the visitors.

The Columbia Steel Corporation, he said, was started in 1910 as a steel foundry located at Pittsburg, California, with a working force of 125 men and with an output of 250 tons of castings per month. This development was due to local interests being concerned with the production of steel castings to meet the requirements of the gold dredging industry in the Sacramento valley. In 1919 the first units of the rolling mill were added to meet demands for reinforcing and small merchant bars. Four years later additional open hearth furnaces were installed, together with a rod mill, wire and nail mills and a sheet mill department. A tin plate mill was put in operation in 1929.

The Pittsburg plant is one of the largest, most efficient and completely equipped steel mills west of the Mississippi River. Three transcontinental railroads and a deep water channel provide unexcelled transportation by rail and water.

In 1923 the Columbia Steel Corporation was further expanded by the purchase of the Torrance Plant of the Llewellyn Iron Works, near Los Angeles, which was originally built in 1916 for the manufacture of merchant steel bars, structural shapes and steel castings. A sheet mill unit was installed in 1926. Last year improvements were made in this plant for the production of high grade sheets, such as are used for automobile bodies, hoods and fenders, refrigerator parts, enameling, locker and furniture stock.

TEEMING MOLTEN STEEL AT PITTSBURG PLANT OF COLUMBIA STEEL COMPANY

The process of manufacture from raw material to completion of product was described by the speaker in a most interesting manner. The raw material, pig iron and scrap, is charged into the open hearth furnace, melted and refined and tapped into a huge ladle holding sixty-five tons of molten metal. The big ladle is carried by an electrically operated traveling crane over rows of hollow cast steel cylinders called "ingot molds," each six feet high with an inside diameter of 13 inches. The molten steel flows from the bottom of the ladle, which process is known as "teeming," forming "ingots." When the ingots are sufficiently cooled to be removed from the molds, they are ready for further conversion into other sizes and forms of rolled steel.

Transported to the rolling mill they are reheated, to be reduced in area by the rolling process into blooms and billets. Further rolling reduces the billets into bars and rods. The billets may be converted into round or square reinforcing bars; or they may be reduced in diameter until they become rods from which wire and nails are made. Blooms are rolled into flat bars eight inches wide, called sheet or tin bars, from which sheets and tin plate are rolled.

Mr. Cohn again rapidly described the several mills; the rolling mill where bars and rods are rolled; the nail mill where staples and various kinds and sizes of nails and tacks are made; the sheet mill where black sheets, annealed, deoxidized, galvanized and other special finish sheets are made; the tin mill where tin mill black plate and tin plate are made; also the foundry where many kinds of carbon and alloy steel castings, weighing as much as 50,000 pounds, are produced.

Since the United States Steel Corporation purchased the Columbia properties in 1930, nearly $3,000,000 has been expended in improvements and additions, so as to better serve the trade in this locality.

The capacity of finished products at the Pittsburg and Torrance plants is approximately 260,000 tons per annum. The pay roll for 1933 was approximately $5,000,000, and the amount of money involved in the purchase of raw materials and supplies for 1933 was almost $5,500,000.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—

Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126..00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.
Mosaic Floors—80c per sq. ft.
Duraflex Floor—23c to 30c sq. ft.
Rubber Tile—50c per sq. ft.
Terazzo Floors—45c to 60c per sq. ft.
Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND

Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" ..... $ 8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—

Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—

Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—

Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; bard material, such as rock, will run considerably more.

Fire Escapes—

Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—

Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 80c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—

Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

Common, $38.00 per M (average).
Common O.P. select, average, $42.00 per M.

1x6 No. 3 Form Lumber	$28.00 per M
1x4 No. 1 flooring VG	56.00 per M
1x4 No. 2 flooring	50.00 per M
1x4 No. 3 flooring	38.00 per M
1x6 No. 2 flooring	52.00 per M
1¼x4 and 6 No. 2 flooring	61.00 per M

Slash grain—

1x4 No. 2 flooring	$46.00 per M
1x4 No. 3 flooring	43.00 per M
No. 1 common run T. & G.	42.00 per M
Lath	6.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.		
1 1-16x2¼" T & G Maple	132.00 M ft.		
⅝x3½ sq. edge Maple	140.00 M ft.		
	13-16x2¼" T&G	⅝x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	

Laying & Finishing 13c ft. 11 ft. 10 ft.
Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.60
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—

O. P. $100.00 per 1000. R. W., $106.00 per 1000 (deivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel. 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work .....40c per yard
Cold Water Painting .....10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.30
2 coats, lime mortar hard finish, wood lath	.60
2 coats, hard wall plaster, wood lath	.65
3 coats, metal lath and plaster	1.20
Keene cement on metal lath	1.25
Ceilings with ¾ hot roll channels metal lath	.70
Ceilings with ¾ hot roll channels metal lath plastered	1.40
Shingle partition ¾ channel lath 1 side	.70
Single partition ¾ channel lath 2 sides 2 inches thick	2.70
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	2.60

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.40
3 coats Medusa finish No. 18 gauge wire mesh	1.75
Wood lath, $5.50 per 1000.	
2.5-lb. metal lath (dipped)	.17
2.5-lb. metal lath (galvanized)	.20
3.4-lb. metal lath (dipped)	.22
3.4-lb. metal lath (galvanized)	.28

¾-inch hot roll channels, $72 per ton.
Finish plaster, $18.90 ton; in paper sacks. Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts. corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Scters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All Classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

Chapter and Club Meetings

SOUTHERN CALIFORNIA CHAPTER

The regular monthly meeting of the Southern California Chapter, American Institute of Architects, was held at the Victor Hugo restaurant, Los Angeles, February 20.

Three budget set-ups were submitted by Henry Carlton Newton, chairman of the committee. The minimum plan, which establishes dues at $10, was adopted after the loss of a motion to set the minimum at $15. The members also adopted a resolution assessing additional dues at the rate of $10 for each $5000 of fees collected, or such amount as a member at his discretion elects to pay, during the period from June 1, 1933, to June 1, 1934.

Douglas McLellan, chairman of the Associated General Contractors committee, announced that the next Chapter meeting would be held with the construction industries at a banquet scheduled for March 15 at the Biltmore Hotel.

A report on the program of restoring historic buildings was made by Henry F. Withey, chairman of the historical works committee, who stated that actual work on this program was put under way February 21.

Wm. F. Staunton, Jr., chairman of the new membership committee, announced a proposed festival of arts to be held in Los Angeles in June. As a means of raising funds for the relief of unemployed draftsmen, the committee suggested a Beaux Arts ball be held in conjunction with the festival. As another means of raising funds, the committee suggested a school competition, with the consent of the school board, for which an entry fee would be charged.

Reporting on the activities of the committee on public schools, Ralph C. Flewelling, chairman, stated that a meeting had been held with the school board relative to support the architects may give the school bond issue.

H. C. Nickerson, chairman of the administration committee under the division of structural service relations, announced that a circulum was in preparation for the proposed school of structural arts.

Edward Cray Taylor, chairman of the building material trades committee, submitted suggestions for eliminating the practice of some lumber, store fixture equipment companies in preparing structural plans for their clients. Attention was called to the fact that it is not an uncommon thing for some concerns to offer a complete plan service without employing an architect.

Suggested methods of furnishing work for unemployed architects and draftsmen were set forth in a report read by Wm. H. Kraemer, member of the re-employment committee.

G. Stanley Wilson, who at the last meeting was appointed a committee of one to carry the Chapter program forward in Riverside county, stated that he had referred the matter to a sub-committee and to the Riverside Chamber of Commerce.

A unanimous vote of appreciation was given A. S. Nibecker, Jr., for his support of the profession in making recommendations to the school board as to the method of handling the school reconstruction program.

William B. Henley, of the School of Government, University of Southern California, gave a talk on the problems of government and our relation thereto, and the value of democracy.

OREGON CHAPTER ANNUAL MEETING

The January 16th meeting of the Oregon Chapter, A. I. A., took the form of the 22nd annual meeting and was held at the Portland Chamber of Commerce. Those present were: Messrs. Crowell, Schneider, Newbuery, Forrest, Church, Jacobberger, Roehr, MacPike, Knighton, Jones, Linde, Stanton, Doty, Marsh, Brookman, Sundeleaf, Whitehouse, Parker, Aandahl, Webber, Logan, Hemenway, Tucker, DeYoung and Howell.

President Crowell reviewed the work of the Chapter during the past year, and Secretary Howell made a report for the executive committee. Treasurer Brookman reported as follows:: Bank balance, January 19, 1933, $144.31; received to January 16, 1934, $96.95; disbursements to January 16, 1934, $176.93; bank balance, January 16, 1934, $64.33.

The auditing committee reported that the treasurer's accounts were correct and his books in order. Mr. Doty moved that the reports of the treasurer and the auditor be accepted. Seconded and carried.

Chairman Parker of the building laws committee announced that his committee had reported favorably on the new housing code, and that same was endorsed by the Chapter last August.

Mr. Aandahl reported for the education committee. He told of the class for architectural draftsmen taught by Mr. Doty, and explained

that the Chapter's action in withdrawing its sponsorship last fall was due to the fact that the class did not reach draftsmen for whom it was intended. Mr. Aandahl reported verbally of the sketch competition.

Mr. Jacobberger, chairman of the entertainment committee, spoke of the Chapter picnic held last June, and expressed the hope that it would become an annual affair.

Mr. Wallwork, chairman of the membership committee, being unable to attend, reported in writing that the Chapter has three new Associate members: A. C. Williams, Raymond K. Thompson and F. Lea MacPike. We have lost one member by death—Mr. Ion Lewis.

Mr. Doty, chairman of public information committee, made an oral report. He stated that the committee's inactivity during the past year was partly due to changes of newspaper personnel in charge of building news. He spoke of the series of articles by Stanton that have appeared in the Oregon Journal.

Mr. Church reported for the legislative committee, Chairman Herzog being ill. This committee did much work with the Legislature in behalf of the Architects' Bill.

Mr. Brookman, chairman of the public works committee, told of the work of his committee in connection with public works projects.

Mr. Parker, chairman of the special committee on the old post office, suggested that letters be sent as follows:

(1) To General Martin, asking him to introduce a bill in Congress to lease the old post office building to the City of Portland for 99 years.

(2) To Leicester B. Holland, chairman, A. I. A. Committee on Preservation of Historic Monuments, seeking his aid in this matter.

(3) To editors of News-Telegram and Oregon Journal thanking them for their recent editorials on the old post office matter.

On motion of Mr. Church, seconded by Mr. Roehr, the secretary was instructed to send the letters suggested by Mr. Parker.

Mr. Stanton moved that delegates and alternates to the Institute convention in Washington in May be chosen in the usual way.

New officers were then elected as follows: President, Jamieson Parker; vice-president, Carl L. Linde; secretary, L. D. Howell; treasurer, Herman Brookman; trustee, W. H. Crowell. The hold-over trustees are: C. H. Wallwork (one year), and Harold W. Doty (two years).

The new president took the chair and spoke in appreciation of the work of President Crowell during a difficult year.

The meeting adjourned at 6:30 p.m. for dinner. Additional members and associates present were: Messrs. Bean, Belluschi and Legge. Clarence H. Wick was a visitor.

City Commissioner Bean was guest of honor and made an interesting talk.—L. D. H.

OEGON CHAPTER FEBRUARY MEETING

The Oregon Chapter, A. I. A., met for dinner at 6 p.m. on February 20, at the Oregon Grill.

Members and associates present were Messrs. Parker, Herzog, Crowell, Willcox, Cone, Sundeleaf, Jacobberger, Church, Johnston, Bean, Legge, Roehr, Tucker, Whitney, Doty, Brookman, Morin, Linde, Logan, Schneider, Howell. Paul Richardson, A. I. A., of Seattle, was a visitor and made a few informal remarks.

Following the dinner, the meeting was called to order for business by the president. The minutes of the special meeting held January 22 were read and approved.

Mr. Brookman, chairman of the renovizing committee, reported considerable progress. A sketch competition for the renovizing of the old house has been held, working drawings made, and models are being prepared showing the house "before" and "after." The sketches submitted were exhibited at the meeting and created much interest.

W. R. B. Willcox, chairman of the Institute committee on taxation, made an interesting talk on taxation that provoked an extended discussion.

Mr. Doty moved that the Chapter endorse the work of the Institute committee on taxation, and instruct the delegates to the next convention to urge that the convention give consideration to the committee's report.

Mention was made of the fine work of the entertainment committee in arranging the dinner and keg of beer.

WASHINGTON STATE CHAPTER

The annual convention of the Washington State Chapter, A.I.A., was held in Seattle, January 20. The meeting marked the fortieth anniversary of the founding of the Chapter. Lance E. Gowen, retiring secretary and incoming first vice-president, presented all of the records of proceedings dating from organization early in 1894 and President-elect Robert F. McClelland took up the movement to compile a permanent historical record.

Officers elected for the year are as follows:

President—Robert F. McClelland, senior member of McClelland and Jones, Seattle.

First vice-president—Lance E. Gowen, department of architecture, University of Washington.

Second vice-president—Nelson J. Morrison, Mock and Morrison, Tacoma.

Third vice-president—Harold C. Whitehouse, member of Whitehouse and Price, Spokane.

Secretary—Arthur P. Herrman, department of architecture, University of Washington.

Treasurer—Albert M. Allen, Seattle.

Members of executive board—Frederick V. Lockman, Donald Thomas, Arthur L. Loveless and Harlan Thomas.

President McClelland's policies for his 1934 administration pertain principally to maintaining the professional standing of the architect. They are herewith presented in four sections, namely:

"(1) To complete the campaign for the design of public buildings by private architects.

"(2) To check the encroachment of other attacks upon the private practice of architecture.

"(3) To prepare an historical record of the Washington State Chapter, A. I. A., in bound, printed form.

"(4) To seek having the profession of architecture represented on the personnel of the Washington State Planning Commission authorized by the recent extraordinary session of the Washington State Legislature.

Business and merriment alternately dominated both afternoon and evening sessions, which were held in the jade room, New Washington Hotel. Retiring President Holmes occupied the chair at the afternoon session. Numerous committee reports were heard, the most important being the resume of the progress made on the CWA architectural project for Seattle municipal properties, given by Mr. Holmes. The results of the Summer Sketching Competition were reported by Carl F. Gould, chairman of the educational committee.

Highlight of the dinner program was a take off on the CWA project presented by Sam Chinn as Doctor See Yup of the Hankow Division of the CWA. Hugh Richardson served as interpreter. Two CWA inspectors quizzed Arthur L. Loveless, who took the part of Floyd A. Naramore, managing director of the Seattle CWA architectural project. President-elect McClelland outlined his plans for 1934. Other speakers were Sherwood Ford and John Graham of Seattle, and F. Stanley Piper of Bellingham. Music was furnished by Victor Jones at the piano.

MONTANA EXAMINING BOARD

Members of the Montana State Board of Architectural Examiners for 1934 are announced by Sam W. Mitchell, secretary of state, Helena, as follows: J. G. Link, Billings; Fred A. Brinkman, and W. R. Plew, secretary, Montana State College, Bozeman.

PRESIDENT DEFERS VISIT

In the January number of The Octagon, published by the American Institute of Architects, it was stated that President Russell would make a visit to the Chapters in the Central States, Western Mountain and Sierra Nevada Divisions.

For financial reasons it has been found necessary to postpone the trip until after the convention in May. The three Regional Directors, Messrs. Frederick M. Mann, Raymond J. Ashton, and David J. Witmer have been requested to notify their respective Chapters.

In view of the reduction in Institute activities contemplated when the 1934 budget was approved in November, it now becomes apparent that every possible economy must be practiced in order to keep those activities in operation until May—at which time the financial affairs of the Institute can be considered and acted upon by the convention.

OAKLAND HOUSING PROJECT

A Federal loan of $2,000,000 has been asked to help finance a low cost apartment house project in Emeryville which would accommodate 753 families of industrial workers. The location is a 12-acre site on the west side of San Pablo Avenue between 45th and 53rd streets, owned by the Rachel M. Winsby estate.

The group in charge of the project includes E. Geoffrey Bangs, architect; Robert C. Williams, housing consultant, and R. O. Brown, chairman of the publicity utility committee of the Alameda County Apartment House Association.

It is proposed to build 12 four-story structures, containing 753 three- and four-room apartments, with breakfast nooks. Tenants will be housed at an average rent of $5.75 a month for each room with gas, light, water and heat furnished.

INSTITUTE CONVENTION

The sixty-sixth convention of the American Institute of Architects will be held in Washington, D. C., on Wednesday, Thursday, and Friday, May 16, 17, and 18. No convention was held in 1933, therefore, the coming one will be of unusual importance.

Attention is called to the desirability of electing delegates well in advance of the convention. Early consideration should be given to this duty by the affiliated Chapters. Every Chapter, no matter how small, or how far away from Washington, should be represented by at least one delegate, it is felt.

BERKELEY RESIDENCE

A building permit has been taken out for a $10,000 residence at 25 Oakdale Avenue, Claremont District, Berkeley, for Mr. and Mrs. F. J. Reagan. Houghton Sawyer is the architect.

« « « « With the Architects » » » »

SACRAMENTO CITY HALL ANNEX

Plans have been completed by Harry J. Devine, architect of Sacramento, for a three-story reinforced concrete addition to the Sacramento City Hall, estimated to cost $60,000. The annex will provide new quarters for the fire department and offices for the health and water departments.

ST. FRANCIS WOOD RESIDENCE

Plans have been completed in the office of Masten & Hurd, 233 Post Street, San Francisco, for a two-story and basement residence in St. Francis Wood, San Francisco, for Leland M. Kaiser, 2431 Filbert Street. Approximately $10,000 will be expended on the improvements.

SCHOOL ADDITION

W. W. Wurster, 260 California Street, is preparing plans for a one-story frame addition to the Soquel grammar school in Santa Cruz County. Besides two classrooms there will be a domestic science room and provision for a cafeteria.

PIEDMONT ESTATE'S HOUSE

Wm. K. Strickland, 1228 Sunnyhills Road, Oakland, has completed plans for a $13,000 brick veneer residence to be built in upper Piedmont Estates for Dr. Edmund M. Taylor.

STORE BUILDING

A one-story reinforced concrete Class C store building will be built at Chestnut and Avila Streets, San Francisco, for Martin Stelling, Jr., from plans by Francis E. Lloyd, 3311 Washington Street, San Francisco.

RECTORY BUILDING

Arnold S. Constable, 580 Market Street, San Francisco, is preparing plans for a two-story frame and brick veneer rectory for St. Vincent Ferrers Church, Vallejo. The project will go forward after Easter. The estimated cost is $25,000.

STORE BUILDING

W. H. Ratcliff of Berkeley is the architect and owner of a store building to be erected in Albany. There will be two stores. Construction will be frame and stucco.

RESIDENCE AND STORES

Noble and Archie Newsome, architects in the Russ Building, San Francisco, have recently awarded contracts for a Colonial residence in Hillsborough for John M. Holmes. The same firm have completed plans and for altering a flat building at 7th and Minna Streets, San Francisco, into stores. Drawings are also in progress for a pretentious hacienda in San Mateo County.

TWO DWELLINGS

Irwin M. Johnson, 2215 Seventh Avenue, Oakland, has completed plans for two dwellings, one to be built in Kensington Court, in North Berkeley and the other on Leimert Blvd., Oakland. George Matheson and George Smith are the owners.

OFFICE BUILDING

Alben Froberg, 1955 Webster Street, Oakland, has prepared preliminary plans for an addition to an office building for the Rheem Manufacturing Company of Richmond. Construction will be of brick.

INDUSTRIAL BUILDING

William E. Schirmer, Financial Center Building, Oakland, has completed plans for an industrial building in Oakland for the Cardinet Co. Structure will have steel frame and brick walls.

PACIFIC UNION CLUB ADDITION

Contract for a $40,000 addition to the Pacific Union Club at California and Mason Streets, San Francisco, has been awarded to Lindgren & Swinerton, Inc. George W. Kelham is the architect.

PERSONAL

WALLACE NEFF has moved his office from 182 E. California Street, Pasadena, to 303 Hollywood Western Building, Los Angeles.

GEORGE W. ELDREDGE, architect, of Los Angeles, has been awarded damages for $25,000 against the Los Angeles Railway Corporation by a jury in Superior Judge Keetch's court. Three years ago he was hit by a street car while crossing Broadway at Tenth Street in that city.

ENGINEERS CLUB ACTIVE

The San Francisco Engineers Club, under the leadership of its new president, H. J. Brunnier, has a membership campaign well under way with a new members committee headed by Wm. H. Popert of the Columbia Steel Company. The objective is 125 new members and the score on February 1 was 13 up and 112 to go. The following have applied for membership: J. E. Bonsack, Robt. Grutzmacher, Charles A. Bigelow, Louis J. Brunel, Royce C. Clark, A. D. Williams, Eugene C. Lloyd, B. M. Brock, Harold C. Price, William Fife, J. F. Gilmore, R. Lynn Colomb and Arthur F. Skaife.

* * *

In keeping with the "Good Fellowship" policy of the president, a "Greeters" table has been started in the club dining room in charge of the entertainment committee, two members of which act as hosts each day.

* * *

The following is a complete roster of officers and committees of the club for 1934; H. J. Brunnier, president; R. M. Alvord, first vice-president; E. A. Crellin, second vice-president; H. W. Whitworth, treasurer, R. H. Elliott, secretary; C. M. Gunn, S. D. Bechtel, F. T. Letchfield, Barrett Hindes, Stanley Sharp, W. R. Birt, W. P. L'Hommedieu, W. W. Bradley

House Committee—E. A. Crellin, chairman; H. Van Etten, George Meyer, H. W. Whitworth, Stanley Pedder.

Finance Committee—R. M. Alvord, chairman; E. B. Bumsted, F. T. Letchfield, H. W. Whitworth.

Admissions Committee—A. A. Hans, chairman; C. K. Cadman, R. A. Hudson, L. A. Elsener, H. G. Sharp, Hall Roe, G. T. Royden, R. Hawxhurst, Jr., R. L. Madden.

Entertainment Committee—Allen Jones, chairman; George Mayer, Albert P. Hahn, A. C. Beyer.

Sports Committee—W. P. L'Hommedieu, chairman; Alexander Fulton, A. V. Thompson.

Membership Committee—W. H. Popert, chairman.

AMERICAN ARCHITECTS HONORED

The competition for the replanning of lower Norrmalm, the business and shopping center of Stockholm, in which a number of American architects participated, was judged last December. Instead of awarding a first prize of 20,000 Kroner, a second of 15,000, and a third of 10,000, as originally intended, the judges gave out three first prizes of 15,000 Kroner each as no solutions submitted seemed to them preeminent. The winning plans comprised one from America, submitted by the late Charles A. Platt, his two sons, William and Geoffrey, and John M. Gates; one from England, prepared by Bertram Hume and Raymond C. Erith of London; and one from Sweden, drawn up by Thure Bergentz and Ake Virgin of Stockholm. It was subsequently discovered that the Swedish winners were employees of the City of Stockholm and they were thereby disqualified. Their prize will probably go to one of the German projects, three of which the judges had decided to buy for 5,000 Kroner each. The first of these had been submitted by Hans Luebke, Edi Reissner, Willi Wagener, and Willy Schoene of Berlin; the second by H. Reissinger of Dusseldorf; and the third by Paul Wolf and Hans Richter of Dresden. Which of these three will get one of the forfeited first prizes is not known, but as a Swedish engineer, Sven Brolin, employed by the street department of Stockholm, had collaborated on the third one, it is likely to be barred.

The jury of award included three members of the Stockholm City Council (Harry Sandberg, Yngve Larsson, and Gustaf Ahlbin); Ragnar Ostberg, designer of the Stockholm City Hall, E. G. Asplund, architect of the new City Library and the Stockholm 1930 Exposition, and Carl Bergsten, who had charge of the decorations of the motor line, "Kungsholm;" the official Stockholm City Planner, Albert Lilienberg; and two foreign members, Professor Hermann Jansen and George L. Pepler, Chief Official City Planner for Great Britain and Wales.

WARNING TO CONTRACTORS

Racketeers and swindlers are again mulcting the building industry, according to State Registrar of Contractors Carlos W. Huntington, in a warning broadcast to twenty thousand contractors throughout California.

"A group of men, masquerading as inspectors for this department," states Huntington, "are working at the collection of mythical special license fees or assessments from state licensed contractors.

"There are no such special fees levied by my department, but I fear that these men will secure considerable money as all the contractors are vitally interested in the National Recovery Act, which allows the imposition of licenses.

"All state inspectors for the Registrar will gladly show positive identification," according to Huntington, "and anyone contacted by impersonators should first call the police, and then notify this department. These crooks must be stopped."

INTERNATIONAL ARCHITECTURE

Christopher La Farge, internationally known architect, gave an interesting lecture on "Modern Tendencies in Architecture and Industrial Art" in Wheeler Auditorium, University of California, Wednesday evening, March 7th.

Mr. La Farge's son, Oliver, recently won the Pulitzer prize with his "Laughing Boy."

At one time Mr. La Farge was assistant general manager of the United States Housing Corporation. He is also a former president of the Architectural League of New York and the New York Chapter of the A.I.A.

He was introduced to the Berkeley assemblage by Warren Perry, head of the School of Architecture, University of California. A portion of Mr. La Farge's lecture was illustrated with stereoptican views taken abroad, in New England and in California.

OAKLAND ARCHITECTS WIN

Announcement has been received from New York that Miller & Warnecke, architects of Oakland, have been awarded first place in a national small house competition held by Better Homes in America in conjunction with the Architctural Forum.

The purpose of the competition was to discover and call attention to the best small house actually constructed in America between 1928 and 1933 inclusive and to thus stimulate interest in overcoming the faulty design and construction of the small house.

This competition was open to all architects of the United States. A jury of five architects selected by the president of the American Institute of Architects judged the homes submitted and made the awards. The winning designs, those receiving honorable mention and a selected group of other homes submitted in the competition, will constitute a traveling exhibition which will be presented in the various cities of the United States.

The home submitted by Miller & Warnecke which won the medal is a Monterey Colonial display home, located in Piedmont Pines on Chelton drive. This home won first prize in an American Institute of Architects Competition held locally in June of last year.

ARCHITECT MARRIED

James S. Arnot, architect, and Miss Helen Elizabeth Schmidt of Fairfax, were married March 11 in the Community Church, Fairfax, following which the couple motored to Carmel for their honeymoon. Mr. Arnot at present is employed in the office of the National Park branch, U. S. Department of Interior, Underwood Building, San Francisco.

EMERGENCY CONSERVATION WORK

Emerson Knight of San Francisco, who is acting as inspector in District 4, which comprises Washington, Idaho, Oregon, California, Nevada and Arizona, with San Francisco as headquarters, reports that thirty camps of 200 men each are now established in winter quarters for the second six-month period of emergency conservation work. Four inspectors cover work in the field in this district, three of these being landscape architects, Daniel R. Hull, Emerson Knight and P. T. Primm, while one, J. G. Lewis, is an engineer. Lawrence C. Merriam is district officer. Mr. Knight reports that—

"Work in District 4 for the first six month period was performed from only seven state park camps. In contrast to this, the second six-month program for the same district is being developed from thirty state park camps. Of this total, eight camps are in the State of Washington, two in Oregon, thirteen in California, six in Arizona, and one in Nevada.

"Not all of the work in this district is being performed on state parks. In several states conservation work is going forward on what are termed Metropolitan areas, which are city-owned parks situated outside of corporate city limits. Work is also being done on properties of water districts not owned by any one city, county, or state. An example is that of East Bay Municipal Utility District adjacent to Oakland and Berkeley, where no less than three camps are placed and busy. Another type is that of Strawberry Canyon, which is east of Berkeley and is owned by the State University of California.

"A wide variety of conservation work is being carried out to conform with comprehensive master plans. Special stress is being laid on the quality of work done and the type of supervision. With such funds as are allotted for the work the aim is to raise the standard of design to a point comparing favorably with the work done on national parks and monuments proper.

"Completed projects in California parks only, to November 1, 1933, include the following:

Telephone lines	17.5 miles
Fire breaks	8.0 miles
Removal fire hazard	155.1 acres
Roadside clearing	32.0 miles
Trailside clearing	7.3 miles
Fences	3.4 miles
Tree disease control	2357 acres
Boundary survey	10 miles
Bridges, foot	3
Bridges, vehicle	3
Forest improvement	68.0 acres
Roads—Truck trails	18.4 miles
Roads, standard	0.2 miles

Trails, foot	3.5 miles
Lookout houses	1
Fighting forest fires (man days)	6588
Tool houses	5
Water systems	11,720 feet
Other structures	52
Public camp ground cleared	155 acres
Public camp ground latrines	3
Public camp ground water supply	100 feet
Stream improvement	2.5 miles
Landscaping	20.0 acres
Erosion control	2.5 acres
Dams, recreational	1
Seed collections	2

"In addition to this a large amount of work was done from two Washington state park camps, complete statistics for which have not yet been compiled.

"In the performance of emergency conservation work the potential importance of its educational and man-building phases for the enrolled men is being steadily impressed upon camp superintendents and their foremen. Many of the supervisory overhead personnel appreciate their opportunities for instructing the enrolled men in the correct use of tools, the better methods of executing the work, and in developing zeal for the work and an understanding of its bearing upon the state park areas as a whole.

"In so far as the leaders have vision and a sympathetic interest in the growth of the enrolled men, and to the degree that they make psychological studies of them, the men tend to advance voluntarily rather than by coercion, and accordingly the quality of the work improves.

"The Office of National Parks, Buildings and Reservations, as a parental body, directs the preparation of master and detailed plans through inspectors and landscape architect foremen, interprets these plans through the superintendents and foremen, and guides the policy and spirit of the work. At all times the attempt is made to cooperate fully with state park authorities in the fulfillment of their needs and wishes. There is always the aim of doing high calibre work and avoiding any speed that might sacrifice quality."

PROVISIONAL CERTIFICATES

At the meeting of the California State Board of Architectural Examiners, Northern District, held on February 27, Provisional Certificates to practice architecture were granted to the following: Norman K. Blanchard, 700 Keeler Avenue, Berkeley; John Davis Young, 2002 California Street, San Francisco; Arthur H. Lamb, Mill Valley.

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SCHOOL ARCHITECTS NAMED

The Los Angeles board of education has appointed architects to prepare plans and specifications for the necessary architectural work in connection with the reconstruction, rehabilitation and strengthening of school buildings, as follows:

Cabrillo Avenue School—(Main building)—Edward Cray Taylor, architect, 803 W. 3rd St. (TR 7231); Ellis Wing Taylor, structural engineer, 803 W. 3rd St. (TR 7231). Estimated cost, $54,837.

Menlo Avenue School — (Main building) — Hibbard, Gerity & Kerton, architects, 816 W. 5th St. (MU 6545); S. B. Barnes, structural engineer, 803 W. 3rd St. Estimated cost, $61,826.

Brentwood School—(Main brick building)—Harold S. Johnson, architect, 1102 Architects' Bldg. (MI 0871); Harold A. Nelson, structural engineer, 236 S. Lapeer Dr., Beverly Hills (CR 11289). Estimated cost, $33,589.

Figueroa Street School—(Buildings No. 1 and 2)—Parker O. Wright, architect, 910 Black Bldg. (MU 3909); David H. Merrill, structural engineer, 562 I. W. Hellman Bldg. Estimated cost, $93,713.

Forty-ninth Street School—(Main building, less top story)—H. C. Deckbar, architect, 2117 La Salle Ave. (RO 1575); H. A. Nelson, structural engineer, 236 S. Lapeer Dr., Beverly Hills (CR 11289). Estimated cost, $83,440.

Fries Avenue School—(Buildings Nos. 1 and 2)—Henry F. Withey, architect, 405 S. Western Ave. (DR 0835); J. S. Ferguson, structural engineer, 1468 Reeves St. Estimated cost, $73,062.

Burnside Avenue School—(Main building)—P. P. Lewis, architect, 1063 Westwood Blvd.; Grant & Bruner, structural engineers, 607 Ferguson Bldg. (MI 2905). Estimated cost, $67,052.

Angeles Mesa School — (Main building)—Henry Carlton Newton and Robert Dennis Murray, architects, 502 Architectst' Bldg. (MI 1971); C. J. Derrick, structural engineer, 500 Architects' Bldg. Estimated cost, $30,565.

Leland Street School—(Main building)—M. L. Barker and G. Lawrence Ott, architects, 346½ S. La Brea Ave. (WY 4103); L. J. Waller, structural engineer, 257 S. Berendo St. (FE 6202). Estimated cost, $61,088.

Seventy-ninth Street School—(Main, assembly hall and kindergarten buildings)—Frank D. Hudson, architect, 701 Laughlin Bldg. (VA 5593); Ralph DeLine, structural engineer, 1144 S. Grand Ave. (PR 1769). Estimated cost, $98,475.

Wadsworth Street School—(Main brick building)—Rea & Garstang, architects, 907 Pacific-Southwest Bank Bldg. (TU 7455); C. G. De

Swarte, structural engineer, room 505, 811 W. 7th St. Estimated cost, $88,007.

Wilmington Park School—(Main building)—H. L. Gogerty, architect, 6272 Yucca St. (GL 2208); Donald F. Shugart, structural engineer, 1770 N. Vermont Ave. Estimated cost, $65,856.

Lillian Street School—(Main brick building)—William Lee Woollett, architect, 802 Architects' Bldg. (MU 6011); Geo. J. Fosdyke, structural engineer, 112 N. Main St. Estimated cost, $53,760.

Loma Vista Avenue School—(Main building)—C. K. Denman, architect, 422 Washington Bldg.; Boyd I. Means, structural engineer, 156 W. 76th St. (TW 2457). Estimated cost, $32,032.

Alta Loma School—(Main building)—E. T. Heitschmidt, architect, 417 S. Hill St. (MU 7744); R. McC. Beanfield, structural engineer, Chamber of Commerce Bldg. Estimated cost, $59,360.

Sixty-eighth Street School—(Building No. 2)—Charles M. Hutchison, architect, 1132 Central Bldg. (TU 7181); Henry Edgar Bean, structural engineer, 1065 Queen Ann Pl. Estimated cost, $34,496.

Sixty-sixth Street School—(Building No. 2)—Gene Verge, architect, 802 Beaux Arts Bldg. (DR 5225); S. B. Barnes, structural engineer, 803 W. Third St. Estimated cost, $39,200.

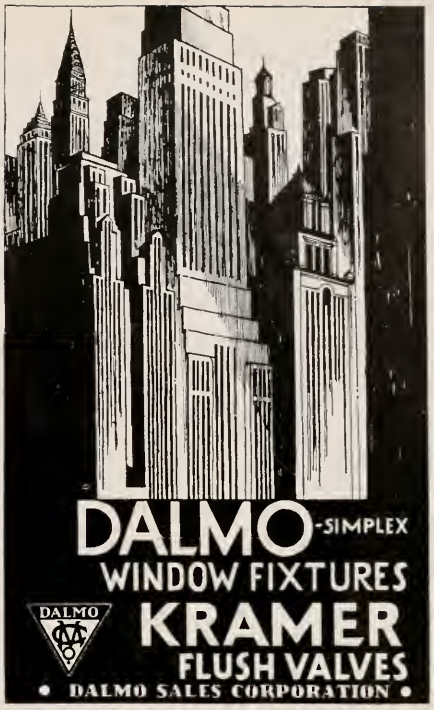
Torrance Elementary—(Main building)—Samuel E. Lunden, architect, 400 Rowan Bldg. (MI 6581); R. McC. Beanfield, structural engineer, Chamber of Commerce Bldg. Estimated cost, $74,241.

Wm. McKinley Junior High School—(Administration and auditorium building, shop, science building and boys' and girls' physical education buildings)—Witmer & Watson, architects, 903 Architects' Bldg.; Oliver G. Bowen, structural engineer, 1144 S. Grand Ave. Estimated cost, $222,832.

Thomas A. Edison Junior High School—(Main building, auditorium and classroom building, shop, cafeteria and home economics building and boys' and girls' physical education building)—A. R. Walker and P. A. Eisen, architects, 706 Pacific Commerce Bldg., Murray Erick, structural engineer, 811 W. Seventh St. Estimated cost, $253,154.

Bell High School—(Main building, shops and physical education building)—Train & Cressey, architects, 226 Western Mutual Life Bldg.; Oliver G. Bowen, structural engineer, 1144 S. Grand Ave. Estimated cost, $264,606.

Gardena High School—(Arts and science building, farm mechanics, administration, shop, home economics and physical education buildings)



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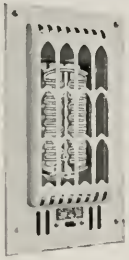

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—Farrell & Miller, architects, 731 N. Marguerita Ave., Alhambra; Blaine Noice, structural engineer, 5436 Carlton Way. Estimated cost, $191,968.

Thomas Jefferson High School—(Administration and auditorium building, academic, science and arts, power house, girls' gymnasium, mechanical arts Units 1 and 2 and mechanical drawing buildings)—Marsh, Smith & Powell, architects, Architects' Bldg.; D. D. Smith, structural engineer, Architects' Bldg. Estimated cost, $434,453.

David Starr Jordan High School—(Main building, domestic science, auditorium and boiler room, shop and physical education buildings)—Sumner P. Hunt, architect, 701 Laughlin Bldg.; Wm. Mellema, structural engineer, 1661½ Beverly Blvd. Estimated cost, $212,632.

Torrance High School—(Main building, auditorium, shop and science building)—Wm. Richards and Wesley Eager, architects, Architects' Bldg.; R. McC. Beanfield, structural engineer, 615 Chamber of Commerce Bldg. Estimated cost, $128,099.

Polytechnic High School—(Shop and boiler room, gymnasium, auditorium, classroom annex and domestic science buildings)—Albert C. Martin, architect, 228 Higgins Bldg.; Holmes & Narver, structural engineers, 1400 Stock Exchange Bldg. Estimated cost, $192,975.

ASKS MR. ICKES SOME QUESTIONS

In an address to the National Convention of the Associated General Contractors of America at Washington, D. C., January 31, broadcast nation-wide over the radio, Secretary of the Interior Harold L. Ickes discussed the National Recovery Public Works program, of which he is the administrator, declaring that the government as a consumer should have the benefit of full and free competition on all construction work done under it. He stated that the submission of identical bids would be construed as evidence of collusion and would be dealt with as unpatriotic. Referring to the N.R.A. codes of fair competition for industry he asserted there was nothing in the codes which required all quotations to be the same.

Seeking further light on the question as to how the cost provisions and minimum price features of the codes were to be regarded as affecting bids on construction work, J. C. Edwards of the William Simpson Construction Company of Los Angeles, addressed the following letter to Secretary Ickes:

"The writer was an interested, though distant, listener to your address of last evening delivered

at the annual banquet of the Associated General Contractors and broadcast over the National hookup.

"Having been actively engaged in the business of general contracting for a lifetime and having served for several years as a director of the Associated General Contractors, I am thoroughly familiar with all of the subjects you touched on in your address.

It left me very much confused, however, on one point.

"Since the advent of the N.R.A. and the establishment and application of the various codes appertaining to the construction industry, it is common practice for us to receive identical bids from material men and manufacturers on all unit price materials such as cement, rock, sand, lumber, reinforcing steel, nails, wire, plaster etc., and this practice has been extended, under supplemental code agreements, to such items as millwork and steel sash that are in no way unit price products such as the others named, but come under the category of sub-contracts.

"The procedure is for the amount of all quotations to be set by a central bureau established and maintained by the individuals or firms selling the products, and the purchaser or consumer receives identical prices from each individual or firm offering the product for sale, whether such vendor be a material man or a sub-contractor.

"Their uniform statement in justification for this procedure is that 'under the Code it is unlawful for us to do otherwise,' and that they are acting in accordance with the President's desires, and I must say that I have seen nothing emanating from Washington to the contrary.

"I am, of course, cognizant of the fact that Code prices are supposed, at least, to be minimum prices and that there is nothing to prevent higher quotations being made.

"I assume this is what you had reference to when you said, in effect, that there was nothing in any Code which required all quotations to be the same.

"In practice, however, any higher quotations than the Code price do not indicate competitive bidding as they mean simply a stepping aside under a pre-arranged agreement.

"You stated, very clearly, that in your opinion, any indication of collusion on the part of General Contractors, Sub-Contractors, or Material Men, bidding on any of the R.F.C. work, would be dealt with as being unpatriotic, in effect treason, and that the submission of identical bids could be construed only as collusion.

"It would seem that this rather singles out the construction industry and warns them not to en-

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ADOBE HOUSE

A portfolio of interesting pictures, with architect's plans, of an adobe house just completed near Lafayette, Contra Costa County, California. Plans by Hardman & Russ, architects.

THE ARCHITECT AND ENGINEER *for April*

gage in a practice that is almost universal in all other lines of endeavor and, up to the present at least, is engaged in without provoking any material or effective criticism.

"The case of your department receiving identical bids on cement for Boulder Dam was used as an illustration and you took what, in my humble opinion, was a very firm and fundamentally sound position when you said that a consumer (in this case the Government) was entitled to the competition resulting from favorable location of supply and differences in cost of manufacture.

"Does not this same premise hold good regardless of who the consumer may be or what the product?

"I understood from your address that you feel the Government should receive the full benefit of competition in the expenditure of these R.F.C. funds, and on this point I agree; what I am at a loss to understand is how can this be accomplished under the N.R.A. Codes which are in effect and, as I understand, must be adhered to under the law.

"I would very much appreciate your clearing up this point for me."

BRIDGES WILL CREATE SUPER-CITY

A super city rising beside the Golden Gate—that is the future visualized for San Francisco by Professor Charles Derleth Jr., Dean of the College of Engineering, University of California.

Dr. Derleth predicts a western metropolis of the ultra-modern type as a result of the construction of the giant Golden Gate and San Francisco-Oakland bridges—but if his dream is to come true, he says, haphazard political boundaries must not continue to interfere with municipal activities.

"A great metropolitan community, the seaport of Central California, has reached the growth where a regional consciousness becomes a necessity," he declared.

"We are a cluster of cities. On great public questions we must cooperate, act in concert, set aside local pride, selfish interests, provincial jealousies and political conflicts. We must live and let live.

"In the days of gold there was a small settlement at San Francisco; a little later a hamlet in Oakland. Today these great cities face each other across the finest harbor on earth. Satellites have grown about them — Berkeley, Richmond, Alameda, Marin, San Mateo. These constitute the heart of a metropolitan area, which stretches out its life blood and its streams of communication south to San Jose, north to Santa Rosa, from the Pacific shore to the great hinterland beyond Stockton and Sacramento.

"The peoples of this area must now recognize their physical and financial relationships, if they

are to achieve a great heritage, for no one part can act alone in enterprises of the magnitude necessary for a great population.

"In partnership we must organize railway terminals, water works, police, sanitary and refuse disposal plants, an integrated harbor, and trunk highways which will detour and not congest the marts of trade. We shall require adequate traffic circulation. We have the finest ferry system in the world, but in an age of airships and radio we need supplemental and more modern communication. Our great harbor has its barriers and these barriers must be bridged or tunnelled.

"Regionally minded metropolitan citizens must see their problems in the large and see them whole. United we stand, divided we fail.

"In youth the parts of a metropolitan community are defined by political and real estate boundaries, grown haphazard, by the accidents of time. They stand apart. Each seems sufficient unto itself. Each demands complete individuality. In growth, the cluster and satellite cities merge. Political and real estate boundaries vanish. Physical, topographic and financial conditions decide public improvements.

"A metropolitan center is an organism like the human body. If one part is paralyzed, the whole suffers. What benefits one part benefits all. Of this we must never lose sight. Too frequently one section of a regional community asks 'of what use is the improvement to us? Our neighbor benefits more, therefore we are opposed.' An organism needs circulation. We have telephones, telegraph, radio, ferries, transit systems, airships. For great water barriers between component cities we need bridges, tunnels or combinations of them.

"Look to Greater New York. In 1883 the Brooklyn Bridge opened its gates. At that time Manhattan and Brooklyn were jealous of each other. Opposition occurred there as it has in all other regional growths. The people of New York are now reconciled; they have forgotten their protests. It is significant that 15 years after the Brooklyn Bridge completion, Greater New York was born.

"Today Brooklyn and Manhattan are boroughs of a vast community. The borough of the Bronx might be likened to a future borough of Marin; Jersey City to San Mateo county. We need not lose our individualities nor autonomy for local affairs. In larger interests we must act together.

"Of all enterprises at this present juncture, circulation is what we need most, to become better acquainted, to understand each other, and learn that we are all fine fellow cities. Therefore the two great bridges, Golden Gate and San Francisco Bay, will stimulate and herald a Greater San Francisco."

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CONTRACTORS' LICENSE BUREAU

Another sharp increase in the registration of contractors throughout California was registered in January, while the work of the Contractors' License Bureau continued at a high level.

In addition, the number of complaint cases filed with the Registrar have increased slightly.

"These were the major developments in the operation of the Bureau in the last 60 days in carrying out provisions of the Contractors' License Law," according to Colonel Huntington, head of the Bureau. Continuing he said:

"Notwithstanding this increased activity, together with work involved in aiding construction industry groups in the formulation of codes of fair competition and the organization of code enforcement authorities, the operating costs of the Bureau have been materially reduced.

"While the Bureau's budget has been reduced and a 50 per cent reduction in the annual license fee authorized, thus curtailing the normal income of the Bureau, the services rendered by the Bureau have been maintained at the same high level as heretofore.

"Registration of contractors in the current month advanced to 21,072, a net gain of 286 licentiates over the previous month, and a substantial increase over the licentiate at the same time last year.

"This is a highly gratifying sign, particularly in view of the fact that five months of the current fiscal year still remain and the total number of licenses issued thus far is only 1,293 below the 22,365 issued in the entire previous fiscal year ended June 30, 1933.

"An increase in complaints filed against contractors during recent months has been notable. These cases involve charges of fraudulent misappropriation or diversion

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of funds and other unethical or illegal acts.

"In the thirty-day period ended December 31, 1933, a total of 28 complaints were filed with your registrar, making a total of 82 cases pending before the Bureau. Cases filed in December involve $11,016 in building jobs, while the total cases now pending involve approximately $107,204.09.

"Following protracted investigations and formal hearings in complaint cases, nine contractors were found guilty of the charges filed. In two cases, the licenses of these contractors were unconditionally revoked, while in the remaining seven cases the licenses were suspended. In eight cases, the accused contractors were acquitted.

"Applications of four contractors for state licenses were denied following formal hearing when they failed to introduce sufficient evidence of character, integrity and ability, as provided in the Contractors' Act.

"A total of 36 formal hearings were conducted by the Bureau. In the informal complaint section, settlements were effected in 17 cases through arbitration, thus obviating the necessity of formal hearings.

"Charges of illegally operating without a state license were filed in the municipal and justice courts against 11 contractors, while 12 cases previously filed were pending at the first of the month in the courts. Convictions were obtained in 12 cases, two cases were dismissed and nine cases were still before the courts at the close of the thirty-day period."

NEW PABCO ROOF PLAN

"It *is new!*", said an official of the Paraffine Company, referring to the new Pabco Roof Plan, "with manufacturers' guaranteed roof maintenance agreements eliminated." He continued, "The Plan fills an urgent need and is truly a masterpiece in its field. It is not often that there is presented such a compact, clear-cut attainment in the building construction indus-

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A 16-page copyrighted booklet (size A-1-A,, File No. 12-B-11) is available on request. It has all the Pabco roof specifications and other useful information.

CHAPTER MEETING

The regular monthly meeting of Northern California Chapter, A. I.A., was held at 6:30 PM., February 27, at Louis' Fashion Restaurant, San Francisco, Albert J. Evers presiding.

In addition to the members, Hugh Pomeroy, Consultant in City Planning, Alfred C. Williams of Oregon Chapter and members of the drafting force of the Historic American Building Survey were present.

May 16, 17, 18, was announced as the date of the next convention of the Institute which will be held in Washington, D. C. The April meeting was stated for the selection of delegates and consideration of Institute matters.

The report of the City of Paris competition, as read by Wm. C. Hays, chairman of the jury, was

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accepted. The thanks of the Chapter was extended to the jury.

The signing of the Construction Industries Code and General Contractors Code and the dates effective were announced.

Hugh Pomeroy announced the Western Conference on Government to be held March 28, 29, 30, at International House, the University of California, at Berkeley, and briefly outlined the subjects of the program. Mr. Evers stated that architects would find much of value and interest in the meetings of the Conference. He hoped that they would not miss the opportunity to attend as many of the sessions as possible.

Documents comprising the Historic American Building Survey—a C. W. A. project—were exhibited. This record of numerous landmarks of Northern California was compiled by a staff of architects and draftsmen under the direction of Mr. Irving F. Morrow, and included photographs and measured drawings of great historical and architectural interest. Many interesting facts pertaining to these were related by Mr. Morrow as he outlined the scope of the Survey.

After viewing this work, the members adjourned to 450 Mission Street to see other drawings which are being developed as a part of the C.W.A. program. Tentative studies of suggested waterfront, park and exposition developments for San Francisco were explained by Mr. George W. Kelham, one of the committee of architects who directed this investigation.—J.H.M.

OCTOGENARIAN

By CHESTER P. NINEKIRK

Edwin Markham, one of our greatest living American poets was scheduled to speak to a crowded audience from the pulpit of a church auditorium. Four colored boys had been singing some very beautiful negro spirituals. Between songs they would stand together for a few moments before singing the next number. It was

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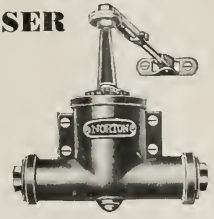

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during one of these pauses that Mr. Markham entered the auditorium, leather bag in hand, and ascended the stairway to the pulpit. Apparently he had forgotten to take something very important to the matter at hand from his portmanteau. He stooped over to search for the elusive document. In so doing, the larger part of the poet blocked the stair exit at a very critical time, all of which was of no interest whatever to Edwin Markham. He was busily engaged, looking for the unfound manuscript.

A wave of chuckling passed over the large audience. In a minute or so the incident righted itself without ulterior motivation, and in the short interim of another few minutes, our audience had forgotten the time, the place and the event. Edwin Markham held the interest of his listeners for hours.

"Some people in New York were going to celebrate my eightieth birthday," said Markham. "The chairman of the celebration committee called me on the telephone about the matter. I told him I didn't want any celebration. 'But,' he said, 'we have already collected one thousand dollars—'"

"Send me the thousand and call off the celebration," said Markham.

Edwin Markham is certainly a living exponent of: "As a man thinketh in his heart, so is he." Past the age of eighty, Mr. Markham writes this poem, called "The Look Ahead."

"I am done with the years that
were; I am quits:
I am done with the dead and
old.
They are mines worked out: I
delved in their pits:
I have saved their grain of
gold.

Now I turn to the future for wine
and bread;
I have bidden the past adieu.
I laugh and lift hands to the
years ahead:
"Come on, I am ready for you!"

Now call him an octogenarian if you will!

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